

The United States

MILLER

Published by
E. HARRISON CRAWKER. { Vol. 13, No. 6. }

MILWAUKEE, OCTOBER, 1882.

{Terms: \$1.00 a Year in Advance.
Single Copies, 10 Cents.}

THE STEVENS ROLLER MILLS

Remove all Germs without Breaking or Crushing them, and Hull the Black Cockle and Remove the Hulls, Clean Bran thoroughly, and make a Higher Grade of Flour than any other Mill known.

OVER 2000 PAIRS NOW IN USE!

Having Secured the **BEST BELT MOVEMENT** ever offered

We are prepared to furnish mills to be run entirely by belt, obtaining the nearest approach to a Positive Motion Without Gears.
We also manufacture the

Celebrated Cosgrove Concentrated Mill

Which is the Most Compact and Convenient Arrangement of Break Rolls and Separators.

READ THE FOLLOWING LETTER FROM A WELL-KNOWN FIRM:

Messrs. JOHN T. NOYE & SONS, Buffalo, New York—

BROOKLYN, NEW YORK, February 20, 1882.

Gentlemen: We take pleasure in addressing you in regard to the introduction of the "Cosgrove Roller System" in our Mills at Brooklyn. By removing four pairs of our Millstones and putting in their place the two sets of the Cosgrove System, purchased from you, we find that with our former bolting and purifying arrangements, we can turn out flour, all roller ground, in quality from 50 to 75 cents per barrel superior to that made from the same wheat by Millstones. We are now grinding no wheat with stones. In making the change, our Mill was shut down but 4½ days to make connections with Elevators, Conveyors, etc. We drive the Cosgrove Machines from the same shaft that we formerly drove the Millstones. The work of the change was done by our own Millwrights, everything being so favorably located. The advantages that we find are principally, viz.: Saving from ¼ to ½ power required to make the same amount of flour by stones; uniformity of work of the Rolls, and the ease with which they are managed, one man being fully able to give proper attention to two or more sets if we had them; the separations made by the cylinders are perfect; any miller can quickly adjust them exactly to suit the wheat he wishes to grind and the work required; the capacity of our machines we find fully 50 per cent. above the amount you guaranteed (200 barrels). In conclusion, we will say, that the result generally of the system is entirely satisfactory to us for the best of reasons, our customers are thoroughly pleased and satisfied with our flour.

Yours truly,

F. E. SMITH & CO.

Among Recent Orders We Name the Following from Prominent Millers:

Lexington Mill Co., Lexington, O., 12 pairs,

E. O. Stanard & Co., St. Louis, Mo., 28 pairs,

E. T. Archibald & Co., Dundas, Minn., 12 pairs,

Pollock & Co., Vincennes, Ind., 12 pairs,

Penfield, Lyon & Co., Oswego, N. Y., 2 Cosgroves.,

Crocker, Fisk & Co., Minneapolis, Minn., 54 pairs.

James Norris, St. Catharines, Ont., 28 pairs,

McNeil & Baldwin, Akron, O., Cosgrove and 10 pairs.

Jno. T. Noye Manufacturing Company, Buffalo, N. Y.

Please mention the United States Miller when you write to us.]

E. W. PRIDE, Agent, Neenah, Wis.

ODELL'S ROLLER MILL.

An Established Success.

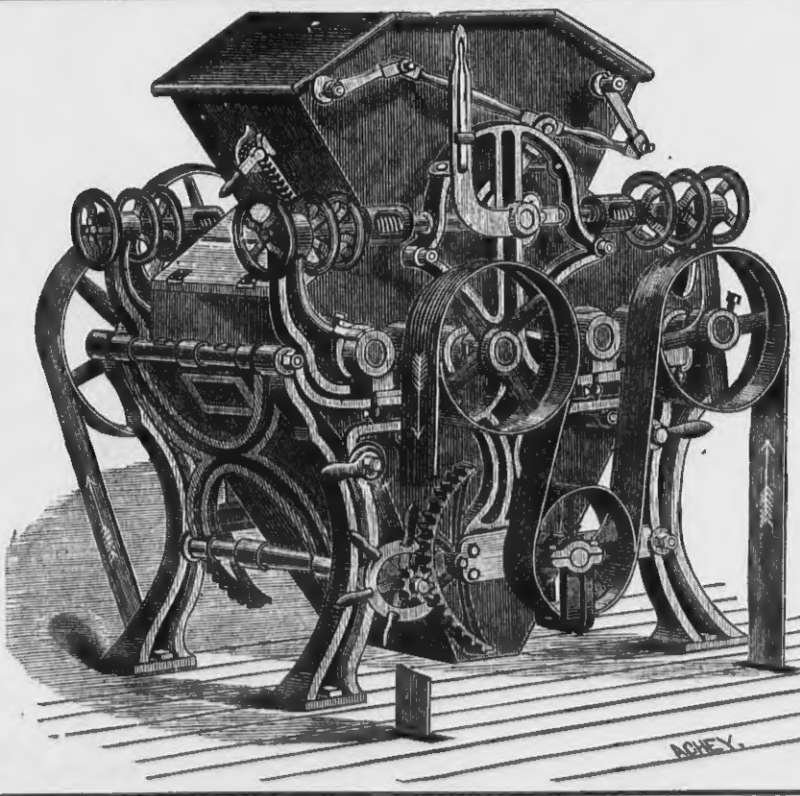
We invite particular attention to the following

POINTS OF SUPERIORITY,

possessed by the Odell Roller Mill over all competitors, all of which are covered by Letters Patent, and cannot be used on any other machine.

1. It is driven entirely with belts, which are so arranged as to be equivalent to giving each of the four rolls a separate driving belt from the power-shaft, thus obtaining a **positive differential motion**, which can not be had with short belts.

2. It is the only Roller Mill in market which can be **instantly stopped** without throwing off the driving belt, or that has adequate tightener devices for taking up the stretch of the driving-belts.



3. It is the only Roller Mill in which **one movement of a hand-lever** spreads the rolls apart and shuts off the feed at the same time. The reverse movement of this lever brings the rolls back again exactly into working position and **at the same time** turns on the feed.

4. It is the only Roller Mill in which the movable roll-bearings may be adjusted to and from the stationary roll-bearings **without disturbing the tension-spring**.

5. Our corrugation is a decided advance over all others. It produces a more even granulation, **more middlings of uniform shape and size**, and cleans the bran better.

WE USE NONE BUT THE BEST

Ansonia Rolls!

References and letters of introduction to parties using Odell Rolls will be furnished on application, to all who desire to investigate the actual work of these splendid machines.

Circular and Prices on Application to Sole Manufacturer,

STILWELL & BIERCE MANUFACTURING CO.,

DAYTON, OHIO, U. S. A.

[Mention this Paper when you write to us.]

THE LARGEST MILL FURNISHING ESTABLISHMENT IN THE WORLD.

RELIANCE WORKS,

EDW. P. ALLIS & CO. Prop's.

MILWAUKEE, WIS. U. S. A.

SOLE MANUFACTURERS OF

Gray's Patent Noiseless Belt

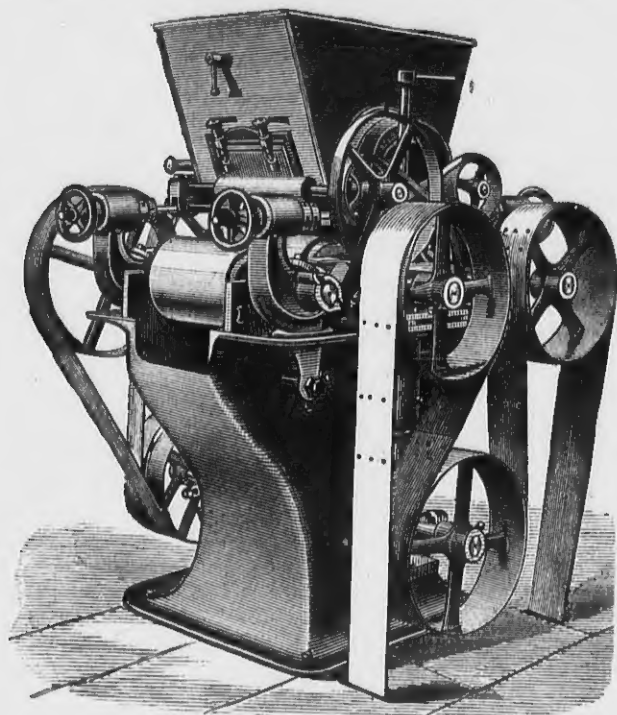
ROLLER MILLS

WITH

WEGMANN'S PATENT PORCELAIN ROLLS.

Unexcelled for reducing Middlings to Flour.

Far ahead of Smooth Iron or Scratch Rolls and entirely superceding the Mill Stones for this purpose.



Read the Following Letters.

Messrs. E. P. Allis & Co., Milwaukee, Wis.
 Terre Haute, Ind., Aug 22nd, 1882.

Gentlemen:—We are very much pleased with the whole eight set of Porcelain Rolls you put in our Mill. The two double set sent us soon after starting up our mill last fall, we put in place of two run of stones for grinding our coarse Middlings.

We find the Flour from the Porcelain Rolls much more evenly granulated and much sharper and cleaner than that we got from the stones, besides the second or fine Middlings are much better, being almost entirely free from germs and not as specky.

Yours Truly,

KIDDER BROS.

[Mention this Paper when you write to us.]

Messrs E. P. Allis & Co.
 Kings County Flour Mills, Brooklyn, N. Y., Aug. 15th, 1882.

Gentlemen:—You ask how I like the Porcelain Rolls as compared with Mill Stones. I have been using the original Porcelain Gear Machines for five years and became convinced a long time ago that Mill Stones could not produce as satisfactory results.

I am now operating your Improved Machine of increased size with nice adjustments, working without noise with Gray's Patent Belt Drive. The Flour it produces is beautifully grainy and strong and its capacity two or three times more than the old Gear Machine.

It runs splendidly, gives no trouble, consumes less power than Mill Stones, dispenses with costly stone dressing and for reducing Middlings and soft branny residuums and tailings is unequaled by any Machine, Iron or stone, at least this is my opinion after five years of practical experience.

Yours truly,

JOHN HARVEY,

Head Miller Kings Co. Mills, Brooklyn, E. D.

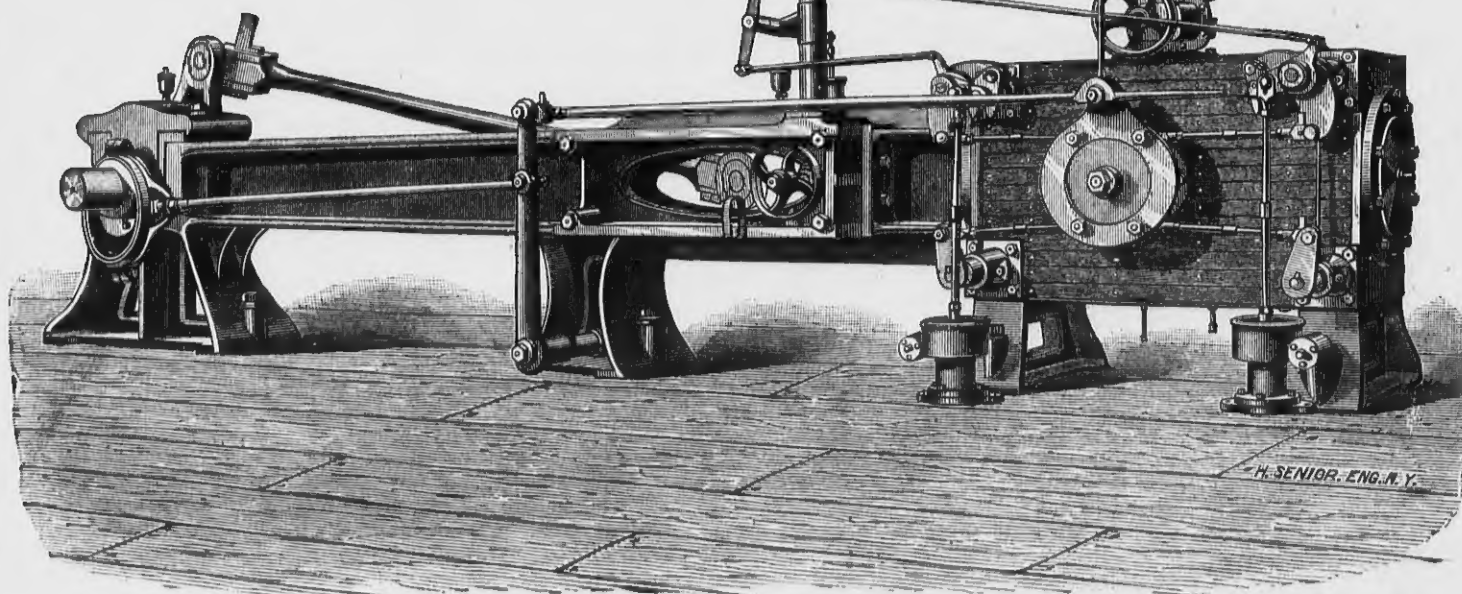
ALSO SOLE MANUFACTURERS OF THE CELEBRATED

REYNOLDS'

Over Three Hundred of these
Engines in use.



CORLISS ENGINES



These Engines are especially adapted for use in Flouring Mills—being unsurpassed in Simplicity, Durability and ECONOMY OF FUEL, and far ahead of any other

Automatic Cut-off Engines.

Send for catalogues of Roller Mills, Flour Mill Machinery, Saw Mill Machinery, Reynolds' Corliss Engines, etc., etc., address:

Edw. P. Allis & Co.,

MILWAUKEE, WIS.

The following is a partial list of Flouring Mill owners who are using the Reynolds' Corliss Engines.

J. B. A. Kern.....	Milwaukee, Wis.	Albert Wehausen.....	Two Rivers, Wis.	L. H. Lanier & Son.....	Nashville, Tenn.
LaGrange Mill Co.....	Red Wing, Minn.	Green & Gold.....	Faribault, Minn.	Wells & Nieman.....	Schuyler, Neb.
New Era Mills.....	Milwaukee, Wis.	Meridan Mill Co.....	Meridan, Minn.	Grundy Centre Milling Co.....	Grundy Centre, Iowa
Daisy Flour Mills.....	Milwaukee, Wis.	Townsend & Proctor.....	Stillwater, Minn.	B. D. Sprague.....	Rushford, Minn.
Winona Mill Co.....	Winona, Minn.	Soo & Brinkman.....	Great Bend, Kansas	The Eisenmeyer Co.....	Little Rock, Ark.
W. D. Washburn & Co.....	Anoka, Minn.	Frank Clark.....	Hamilton, Mo.	A. W. Ogilvie & Co.....	Montreal, Canada
Archibald, Schurmeier & Smith.....	St. Paul, Minn.	N. J. Sisson.....	Mankato, Minn.	Geo. Urban & Son.....	Buffalo, N. Y.
White, Listman & Co.....	La Crosse, Wis.	Jas. Campbell.....	Mannannah, Minn.	A. A. Taylor.....	Toledo, O.
Milwaukee Milling Co.....	Milwaukee, Wis.	C. J. Coggin.....	Wauconda, Ill.	Pindell Bros. Co.....	Hannibal, Mo.
Stuart & Douglass.....	Chicago, Ill.	J. J. Wilson.....	Algona, Iowa	Kehler Milling Co.....	East St. Louis, Ill.
Stillwater Milling Co.....	Stillwater, Minn.	Ames & Hurlbut.....	Hutchinson, Minn.	Walsh, DeRoo & Co.....	Holland, Mich.
Otto Troost.....	Winona, Minn.	Lincoln Bros.....	Olivia, Minn.	Goodlander Mill and Elevator Co.....	Fort Scott, Kas.
E. T. Archibald & Co.....	Dundas, Minn.	Northey Bros.....	Columbus Junction, Iowa	W. Seyk & Co.....	Kewaunee, Wis.
C. McCreary & Co.....	Sacramento, Cal.	Bryant Mill Co.....	Bryant, Iowa	Topeka Mill and Elevator Co.....	Topeka, Kan.
Gardner & Mairs.....	Hastings, Minn.	David Kepford.....	Grundy Centre, Iowa	Strong Bros.....	Graceville, Minn.
J. Schuette & Bro.....	Manitowoc, Wis.	Waterbury & Wagner.....	Janessville Minn.	C. A. Roberts.....	Fargo, D. T.
Minnetonka Mill Co.....	Minnetonka, Minn.	W. A. Weatherhead.....	South Lyons, Mich.	Coman & Morrison.....	Fox Lake, Wis.
J. D. Greene & Co.....	Faribault, Minn.	Geo. Bierline.....	Waconia, Minn.	J. G. Schaapp.....	Grand Island, Neb.
F. Goodnow & Co.....	Salina, Kansas	James McCafferty.....	Burton, Mo.	Fred Schumacher.....	Akron, Ohio
A. L. Hill.....	Faribault, Minn.	Geo P. Kehr.....	Menomonee Falls, Wis.	Warren Mfg. Co.....	Warren, Minn.
Beynon & Maes.....	Owatonna, Minn.	Winona Mill Co. compounding their present 24x60 Winona, M.			
Eagle Mill Co.....	New Ulm, Minn.	Forest Mills Co.....	Forest, Minn.		

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MILWAUKEE, OCTOBER, 1882.

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The Phoenix Foundry and Machine Works at Terre Haute, Indiana.

A MODEL MILL-BUILDING ESTABLISHMENT.

The engraving which we herewith present for the inspection of our readers, represents the PHOENIX FOUNDRY AND MACHINE WORKS, Manufacturers and Mill-builders of Terre Haute, Indiana.

The works of this company are located near the center of the city, and in close proximity to the Union Depot, and are connected by track with nine railroads centering there. In 1865 Mr. McElfresh, who is the President of the Company, founded what is now known as the Phoenix Foundry and Machine Works.

cupolas, and large travelling cranes, capable of handling the largest castings used in the business. The core-oven stock-house and rattler-rooms are conveniently situated outside of the foundry. The offices are conveniently arranged and fitted up for the transaction of business and entertainment of customers. The draughting room, occupying the second story of the offices is splendidly lighted and equipped, making it the most complete and convenient in the country.

The men employed in every branch of the business are mechanics—and it reaches from the draughtsman who makes the plan to the millwright who puts up the work—through foundry, machine-shop and work-shop. The

The company, in addition to mill building, will continue their established general machine business. The engines and general iron work for mill purposes, made by the company for the past seventeen years, have a reputation second to none in their line, for finish, pattern and economical construction.

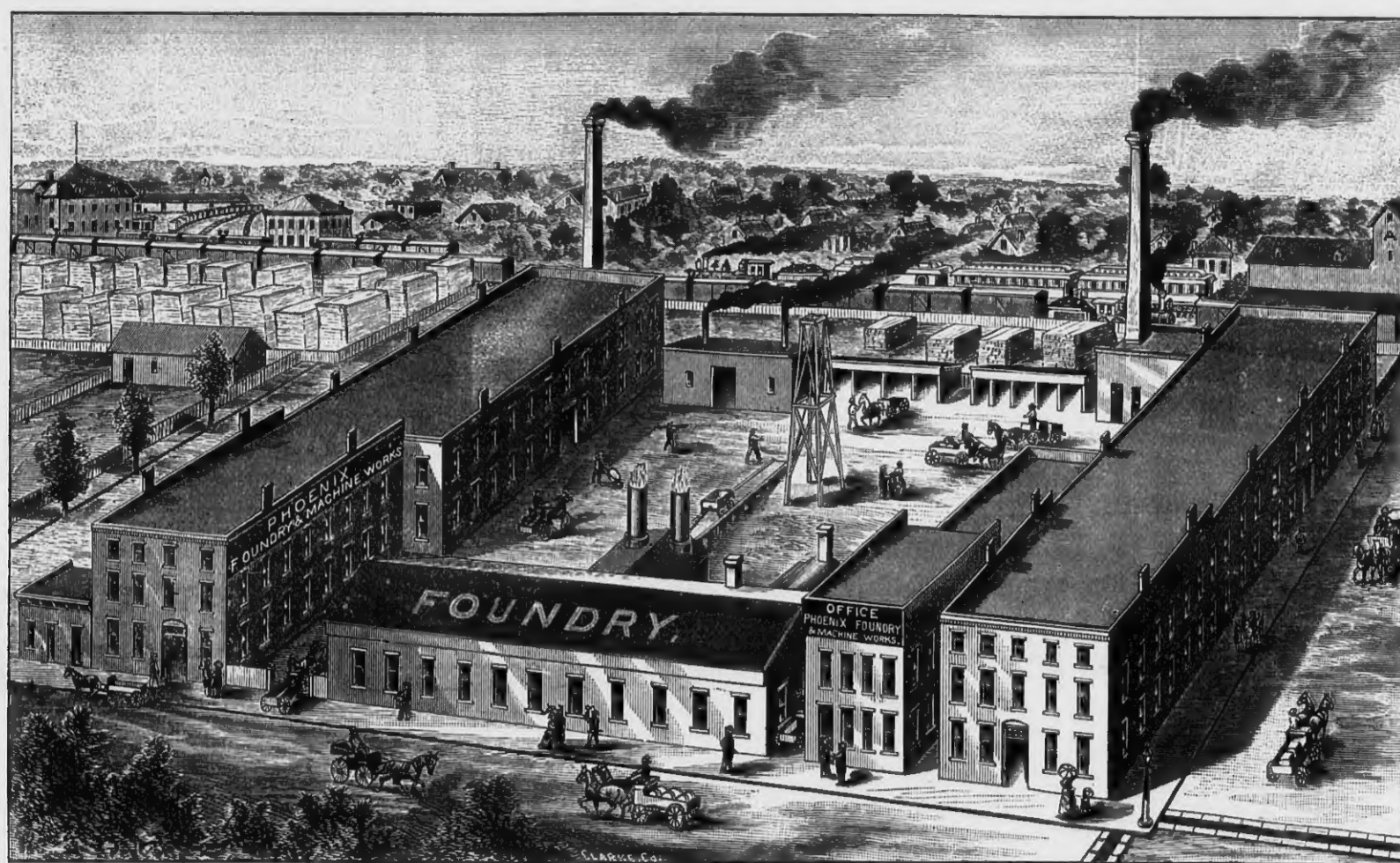
All the persons who are connected with the company are men of business experience and are wide awake and go ahead, and with all these special machines, with their extensive shops in which they have mechanics who cannot be excelled in their respective trades, they intend to make their institution occupy the front rank among the best mill-building establishments of the country.

but many millers are beginning to express the opinion that they can make better flour and more money with good winter wheat than they can with such spring wheat as they have been using during late years. With the modern system of milling, nearly if not quite as good results can be obtained from winter as from spring wheat, both as regards to quality and quantity. This may be considered a fact.

Economy of Steam Engines.

Editor U. S. Miller :

Will you kindly inform me what is the best record of performance of an automatic cut-off steam engine. Also how they compare with common slide-valve



PHOENIX FOUNDRY AND MACHINE WORKS, TERRE HAUTE, IND., U. S. A.

In 1879 the Company was incorporated. The present officers, F. H. McElfresh, President; Jonathan Mills, General Manager; Edward Gilbert, Vice President; H. C. Gilbert, Secretary; and John W. Davis, Treasurer. Their business growing and by experience learning, they concluded to enter extensively into the mill building business—that branch of industry having grown to great proportions and demanding something of the kind. In this the Phoenix Foundry and Machine Works have succeeded. From the small beginning made by Mr. Elfresh they have reached out until they have their present substantial and extensive shops as shown in the cut. The machine shop is 52 x 156 feet, with boiler and engine room in basement, the building being two stories high. The wood-working shop is 50 x 156 feet, two stories high. The foundry is 50 x 140 feet, and an office 30 x 48 feet. The machine shop, as well as foundry and wood-working shop, is equipped with the best iron and wood-working machinery that can be purchased. It consists of all the newest patterns in iron and wood working machinery, such as planers, engine lathes, pulley lathes, drills and radial-drills, screw-cutters, shapers of every variety and style, universal wood-workers, planes, surfacers, band-saws, jig-saws, cut-off-saws, rip-saws, mortising and boring machines; and all these fitted with a thousand-and-one attachments and connections necessary to carry on the business to the greatest advantage. The foundry is thoroughly equipped with two

man who works each tool is a *mechanic* in the largest sense, and unexcelled.

They have associated with them Mr. Jonathan Mills, who is well known by the millers all over the country as one who has devoted himself to the wants of the milling trade, and to whom the millers are indebted for many inventions which have lightened their labors and filled their pockets.

Mr. Mills has now three new machines which the company are manufacturing—a new six-break reduction machine, with scalping reels combined, which will be built in one frame, and is intended to meet the wants of small mills. This machine, it is believed, will enable the *small mills* to produce as good results as the largest mill in the country, and at a cost in proportion to the capacity; a new roller mill which exceeds in simplicity of construction all other machines, and which we think, if one can judge from a picture, and we have a photograph before us, will certainly be a favorite mill machine as far as roller machines go; a "centrifugal bolting reel," triple, double and single, which is claimed to be far ahead of anything ever put on the market in these days of centrifugal bolting machines.

With these three machines, and the arrangements the company have made with Mr. Mills for the handling of his "Disc Reduction Machine," which has an established reputation by its use in some of the largest mills in the country, the company will have the advantage of three different and complete systems on which to build mills.

It is the object in presenting this cut simply to call the attention of the millers who do or may stand in need of anything in the way of improvements, or who contemplate building, to the fact that this company is now fully equipped, and propose to be able to compare favorably with and not be behind any in first class work and machinery, and to keep up with the progressive spirit of the age. They solicit correspondence, and advise all who have the main chance in view, that they will consult their own interests by consulting them.

Winter vs. Spring Wheat for Flour.

THE observing miller will not have failed to notice that a change of public taste has been taking place during the past year or two, favorable to winter wheat. The original cause of this, undoubtedly may be laid to the farmers in the Northwest, who persistently sowed soft varieties of spring wheat, and also to the unfavorable *quality* of most of the spring wheat during late years in Wisconsin, Minnesota and portions of Dakota. To-day some of the best mills in Milwaukee are running on Kansas winter wheat, and the flour produced therefrom sells at a most desirable price. The steward of one of the finest hotels in the West, after repeated tests, has given his order for a considerable quantity of Winter Wheat Patent to take the place of Spring Wheat Patents used heretofore. If millers could always obtain No. 1, Hard Spring Wheat for milling purposes, at a reasonable price, there is little doubt but that they would greatly prefer it;

engines in point of economy and cost of repairs.

Answer:—There are numerous designs of automatic cut-off engines. The Corliss type, although among the first, if not the first, to be put in successful use, is still conceded by engineers to be superior to all others in the points mentioned. We do not know about the best recorded performance of engines of this class, but in his report on the trial of an 8" x 24" Reynolds' Corliss engine, (manufactured by E. P. Allis & Co.,) Mr. Jno. W. Hill, an acknowledged authority on steam engineering, says: "this economy of 2½ pounds of coal per indicated horse-power per hour, in an 8" unjacketed engine has to my knowledge never been equalled." This is for a small engine. It may be noted that the Daisy Roller Mills, in Milwaukee, using a compound Reynolds-Corliss engine has repeatedly made a barrel of flour with less than 25 lbs. of coal, and in several instances with less than 20 lbs. If any other engines have a better record than this we shall be pleased to publish it. The comparative economy of slide-valve and automatic cut-off engines depends largely upon the efficiency of the slide-valve engine. If it is in good order and properly designed for its work, a slide-valve engine will give about three-fourths the power from the same expenditure of fuel, or, in other words, an automatic cut-off engine will save about one-third the fuel used by the slide-valve engine. But many if not in most instances it will save one-half, or even more.

THE CASE**PURIFIER****Reduction Machines and Rolls.****READ WHAT MILLERS SAY OF THEM!
PURIFIERS.**

CHAMBERLIN & FINLY, Higginsville, Mo., write: "We thought if your Purifier was half as good as your circulars made it out to be it would be the one we wanted, but gentlemen you have not half stated the merits of your own machine. It is to-day without a rival in this country; it is far ahead of all others on the market and it gives us pleasure to tell you of it," etc., etc.

MORMAN & Co., Shelbyville, Tenn., write: "We are ecstatic over the results. We do not believe there is a Purifier in the whole domain of America that can surpass it. You are a success."

H. WATTERS, Mechanical Engineer, St. Paul, Minn., writes: "I am well satisfied with the results and working of the machine in all its details. It will do more work for the room it occupies than any machine I know of."

GEO. H. BENNETT, Allegan, Mich., writes: "We like your Purifier extremely well; it is a much better machine than the Smith Purifier, we can govern it perfectly and the feed and shaking device cannot be surpassed."

MANY OTHERS write: "It is a daisy." "Sorry we did not put it in long ago." "It is just our kind--large capacity; easily governed; runs light; no noise or jar; does splendid work." "I would not give the one we have for seven—Purifiers."

DAVID SNIVELY & SON, Williamsburg, Pa., write: "The Feed Boxes ordered for our Smith machines work like a charm, doing excellent work. If you want them back you will have to buy the machines to which they are attached."

BREAKS AND ROLLS.

J. B. MILLER & Co., Ashley, O., write: "During a long experience in milling we have often seen the time when we had to hunt up customers for our flour, but since we put in your system of Breaks and Rolls we have never been able to keep up with our orders. Send any one you please to see your system in our mill; we will give it a good name for it deserves it."

W. MELLON & SONS, Beaver Falls, Pa., write: They have equipped their entire new mill with our line of Reduction Machines, Rolls, Purifiers, Reels, etc., and say "They are all right, can't be any better. We have made a thorough investigation of the different Roller systems but have not as yet seen any for which we would make an even exchange."

W. S. BACON, Tiffin, O., writes: "The machines are working beautifully. My flour is good and I am making 49 bbls. of flour out of 200 bushels and 18 lbs. of wheat. I am answering numerous letters of inquiry about your system; send any to us or tell them to write, and we will do you lots o' good."

C. DE WAR & Co., Kansas City, Mo., write: "We must say your Rolls are doing splendid work and are no trouble to run at all, they have saved us already \$1000, we estimate."

MANY OTHERS write: "I do not believe a more perfect Break could be made." "They will beat any Roll made." "They have raised our flour \$1.00 per bbl." "We are glad you have come to the relief of the Custom Miller." etc., etc.

Millers wanting a Purifier, Single Roll Break Machine, or full Reduction Mill, will do well to confer with us before ordering.

Case Manufacturing Co.,**OFFICE AND FACTORY, 5th Street, North of Naughten. Columbus, Ohio, U. S. A.**

[Mention this Paper when you write to us.]

UNITED STATES MILLER.

E. HARRISON CAWKER, EDITOR.

PUBLISHED MONTHLY.

OFFICE, No. 118 GRAND AVENUE, MILWAUKEE, WIS.

SUBSCRIPTION PRICE.—PER YEAR, IN ADVANCE.

To American subscribers, postage prepaid.....\$1 00
To Canadian subscribers, postage prepaid..... 1 00
Foreign Subscriptions..... 1 50
All Drafts and Post-Office Money Orders must be made payable to E. Harrison Cawker.

Bills for advertising will be sent monthly, unless otherwise agreed upon.

For estimates for advertising, address the UNITED STATES MILLER.

[Entered at the Post Office at Milwaukee, Wis., as second class matter.]

MILWAUKEE, OCTOBER, 1882.

We respectfully request our readers when they write to persons or firms advertising in this paper, to mention that their advertisement was seen in the UNITED STATES MILLER. You will thereby oblige not only this paper, but the advertisers.

Flour Mill Directory.

CAWKER'S AMERICAN FLOUR MILL DIRECTORY for 1882, was completed, ready for delivery February 1, 1882.

It shows that there are in the United States 21,316 flour mills and in the Dominion of Canada 1,488. The mills in the United States are distributed as follows:

Alabama, 888; Arizona, 17; Arkansas, 231; California, 209; Colorado, 52; Connecticut, 309; Dakota, 44; Delaware, 96; District of Columbia, 7; Florida, 81; Georgia, 514; Idaho, 18; Illinois, 1258; Indiana, 1163; Indian Territory, 8; Iowa, 872; Kansas, 437; Kentucky, 642; Louisiana, 41; Maine, 229; Maryland, 349; Massachusetts, 363; Michigan, 831; Minnesota, 472; Mississippi, 297; Missouri, 942; Montana, 20; Nebraska, 205; Nevada, 10; New Hampshire, 202; New Jersey, 445; New Mexico, 28; New York, 1942; North Carolina, 556; Ohio, 1462; Oregon, 129; Pennsylvania, 2786; Rhode Island, 47; South Carolina, 205; Tennessee, 620; Texas, 548; Utah, 129; Vermont, 231; Virginia, 689; Washington Territory, 45; West Virginia, 404; Wisconsin, 780; Wyoming, 8; Total, 21,356.

The directory is printed from new Burgeols type on heavy tinted paper and is substantially bound. It makes a book of 200 large pages. The post offices are alphabetically arranged in each state, territory or province. The name of the mill, the kind of power used and the capacity of barrels of flour per day of 24 hours are given wherever obtained which is in thousands of instances. This work is indispensable to all business men desiring to reach the American Milling Trade.

Price Ten Dollars per copy on receipt of which it will be sent post paid to any address. Remit by registered letter, post-office money order or draft on Chicago or New York made payable to the order of E. Harrison Cawker, publisher of THE UNITED STATES MILLER, Milwaukee, Wis.

THE new Russian tariff imposes an import duty of 24 cents per hundred weight on flour.

WE cordially invite manufacturers of flour milling machinery, millers and mill-furnishers to send us items of news for publication in this journal. We make no charge for publishing news.

THE Pennsylvania Millers Association will meet at the Lochiel House, in Harrisburg, Pa., at 10 a. m., Tuesday, October 10. All Pennsylvania millers are urgently requested to be present at that time.

MESSRS. HOWES, Babcock & Ewell of Silver Creek, N. Y. have recently been making an extensive addition to their machine shops and with a large number of additional workmen will be able to meet the immense demand for their specialties.

WE have just received a handsome new catalogue from the Stilwell & Bierce Manufacturing Co., of Dayton, O., which describes and illustrates completely the ODELL Roller Mill manufactured by the company. Any miller contemplating changing to the roller system, should write for a copy immediately.

A subscriber residing at Akyab, India writes us requesting to learn something about our machinery and methods for milling rice in the United States. If any of our subscribers among American rice millers will favor us with a description of our most approved processes we will take it as an especial favor.

FROG HUNTING.—Mr. Albert Hoppin, late publisher of the *Northwestern Miller*, but now a peaceful and quiet citizen of Milwaukee, recently went out to Delafield Lake for the purpose of fishing and frog hunting. Before going he sent to the Great Western gun works and purchased a small parlor rifle, with 1000 cartridges of the smallest size, the bullets being about the size of a duck shot. He went over to Buck's millpond frog hunting, and found a very large frog of the masculine gender sitting on a stump just above the water. He shot 27 times at him, when his frogship lost his balance and dropped over into shallow

water. Upon taking the frog out it was found that he had swallowed 26 of the bullets, catching them in his mouth, supposing them to be flies. When he went to move the weight of the lead carried him overboard, and when taken out he was not dead, but awfully sullen.

The *Prairie Farmer*, of Chicago, Ill., one of the oldest and most valuable agricultural journals in the United States has recently changed its title to the *Illustrated Peoples Weekly and Prairie Farmer*. It is under new management, has a new form, is handsomely illustrated, able edited and of more value than ever before to its hosts of readers. We wish this journal, an era of good fortune.

ONE of the effects of a great crop of wheat and consequently good and cheap flour will be that the laboring classes of Europe will quickly learn the pleasant qualities of good, white, wheat flour. Having once acquired the taste for good flour and the knowledge of its nutritious qualities, they will no longer be contented to put up with the miserable low grades that have been so long their chief sustenance. They will, like the American laboring man demand good flour and a greater supply than ever before will be called for from American flour millers.

BRADSTREET'S estimates the wheat yield of the United States for 1882 at 526,400,000 bushels, and places the estimate for the various states and territories as follows:

WHEAT YIELD OF THE UNITED STATES, 1882.

Ohio.....	40,500,000
Michigan.....	29,000,000
Indiana.....	46,000,000
Kentucky.....	16,000,000
Illinois.....	51,500,000
Wisconsin.....	23,800,000
Minnesota.....	41,500,000
Dakota.....	12,000,000
Nebraska.....	18,000,000
Kansas.....	35,000,000
Iowa.....	30,000,000
Missouri.....	49,000,000
California.....	10,000,000
Oregon & Washington Territory.....	48,500,000
Southern states.....	39,500,000
Middle states.....	1,100,000
New England states.....	5,000,000
Colorado & Territories.....	5,000,000
Total yield of wheat.....	526,400,000

THE *Herald* says the railway situation is rapidly becoming interesting for Los Angeles and Southern California. A few days since the long deferred connection between the California Southern and the Southern Pacific was chronicled at Colton. Just now only a gap of twelve hours staging intervenes between the overland connections of the Southern Pacific, building eastward, and the sunset route, building from New Orleans. In other words, we ought very early in September to have a through rail route between New Orleans and Los Angeles and San Francisco, under one management. It has long been the declared intention of the controllers of the Southern Pacific to put on a line of steamers between New Orleans and one or more European ports as an incident of their sunset route, with the double purpose of carrying wheat in bulk to Europe via New Orleans and of bringing as a part of return cargo immigrants from the old country to this Coast at a very low rate of fare. In addition, the Atlantic and Pacific Railway is being pushed to the Colorado river, at the "Needles," while an equal expedition is being shown in building the branch of the Southern Pacific eastward from Mojave, to meet the Atlantic & Pacific at that point.

A TECHNICAL SCHOOL FOR MILLERS. Any one, who is tolerably well posted in milling matters, after glancing through the "Question and Answer" columns of milling papers and noting the character of many of the questions propounded will readily concede two things: First, that many of the questioners do not understand even the rudiments of the trade, and second, that there ought to be a place where these men if they intend to follow the trade may go to school and learn how the business should be conducted.

Either the Millers' National Association should take up this matter and solicit funds for the establishment of such a place of instruction or influential millers should bring their influence to bear on some well established institution of learning to add such a department.

Funds could readily be raised from the twenty odd thousand mill owners of this country to establish such a school but it will never be done until some organization goes to work at it systematically and persistently. We believe the most appropriate manner to get the school organized would be for the Millers' National Association to appoint a committee to solicit subscriptions, make plans for the enterprise and see that they were faithfully carried out.

Personal.

THE *United States Miller* acknowledged calls during the past months from the following gentlemen connected with the trade:

A. P. Kastler, representing the Andree Centrifugal Flour Dressing Machine, Chicago, Ill.
W. D. Gray, M. E. of Edw. P. Allis & Co.
C. A. Wenborne, publisher of *The Milling World*, Buffalo, N. Y.
C. M. Gilbert, representing The Richmond Manufacturing Co., of Lockport, N. Y.
Mr. Sessinghaus, of Sessinghaus Bros., St. Louis, Mo.
Charles Booth, of Red Wing, Minn.

[Written for the United States Miller]

The Question of Change in Small Mills.

In the every-day experience of every milling engineer, especially if by his energy and skill he has earned something more than a local reputation, inquiries like the following are more than frequent, the never-ending repetition having just enough variety in details to render it necessary to fit the answer to each particular case. One man writes: "My mill has" [such and such machinery.] "What will I need in addition to make it a first-class mill?" Another says: "I am crowded for power, and want to make as much flour as possible. What machinery will make the most flour with the least power?" Another more briefly will ask: "How much will it cost to make my mill into a first-class roller mill with a capacity of 100 barrels daily?" forgetting to give the first item of information regarding the present condition of his mill, or the conditions under which it must work. It is impossible to frame any general answer which will suit all the various queries which are continually being made. Millers, as a rule are a thinking class of men, but are too prone to rely on the advice of those whom they consider better posted than themselves, without considering that mills are a good deal like men—each one has its individuality of character, and its owner should of all men be the one who is best posted as to its immediate requirements. He must know, as a matter of course, the conditions under which it must be operated, the wheat it has to grind, the market it is working for, the machinery it has to work with, and the means which are available to increase its equipment. If he cannot tell what he needs, it is manifestly next to an impossibility for one to tell, who has never seen his mill and who is given but the most meager information on which to base his reasoning and form his judgment.

Among the larger mills the uncertainty as to what machinery to employ and what it will do, does not exist to such an extent as among the smaller mills, which are now being forced by close competition into the adoption of new systems. Such may well plead the constantly recurring changes of the last ten years, as valid reasons for their being unsettled as to what they really require, and how they can best go about the improvements which can no longer be delayed. Fortunately the experience of the last few years has demonstrated some few points, such as that rolls are much superior to millstones; that they will make more flour with an equal expenditure of power; that they enable a miller to make a closer yield with a better resulting grade of flour; that sharp corrugated rolls are best for making the reductions; that smooth rolls have their appointed place; and that porcelain rolls are unexcelled for the flouring process. These are conceded facts among the best milling engineers of this country and Europe, however much some furnishers, for their own selfish policy may cry up other particular methods and machinery. Right here it may be pertinent to remark that the milling engineer, when applied to for information, can almost invariably tell whether his querist has been for any length of time a careful reader of the best milling papers. Such as are, are well posted and know what facts have been demonstrated, and how few the steps are which have been taken to make milling an exact science, and how impossible it is for the best engineer to tell what is best to be done in any particular case without the fullest information as to the facts bearing upon it.

The roller system, has supplanted the "New Process" much more quickly and completely than the latter did the old style of milling. But comparatively few new process mills now remain without at least a partial addition of rolls, and these latter are being changed to the complete roller system as fast as the means of their owners will allow. It may seem strange, but it is a fact, that by far the largest number of inquiries about rolls and cost of adopting them, are now coming from the one and two run custom mills, many of

which are destitute even of that necessary part of a modern mill, the purifier. And most of these inquiries are made in good faith, and not merely out of curiosity. To those who are giving this matter thoughtful study, it may be said that, it is not necessary for them to make the complete change at once, although it can be afforded, such a change would undoubtedly make a profitable return on the investment much sooner than if rolls are adopted gradually. Considering the case of the smallest mill, and presuming that the owner has already found out the advantage of the purifier, and has one in his mill and knows something of its use, he can adopt rolls to his benefit and pecuniary well being, first to clean bran and crush the coarse germy middlings and tailings from the purifier. If he is able to go still farther in the system, he can put in porcelain rolls for reducing the finer middlings to flour. Still further, he can put in rolls on the successive breaks or reductions of the wheat. By using rolls on the bran he can grind higher with the millstones and thus obtain a whiter and clearer flour; by using rolls on the tailings and germy middlings—of which he will have more the higher he grinds the wheat between the stones—he will save a good deal of flour which would otherwise be lost, and what he saves will be of the best flour. By using rolls for the breaks he will make many more middlings, susceptible of purification, thus improving the color and quality of flour. He will need more purifying capacity, more bolting surface, and from one step to another he will find that it will lead to the complete changing of his mill. It will cost less to make this change all at once, but if the miller goes only as fast as he able to master the theory and practice upon which his mill should be operated, he will lose nothing by mistakes. Of one thing he should beware, and that is the ill-informed, self-sufficient and generally ignorant millwright, who tells him he can make as good flour without modern machinery as with it. There may be locations in sparsely settled districts and on the extreme frontier, where the custom naturally tributary will not now, and may never pay for putting in anything beyond the simplest out-fit, but in any locality where the mill, no matter how small it is, has to compete with larger rivals for its home trade, it will not pay to make it any less than complete. If the owner has the means to make the change he will gain nothing by delay, and he will gain much if he consults only the best milling engineers he can find, even if he does have to pay something for the privilege. The trouble has all along been, that the changing of the larger mills has kept all the larger mill-furnishing establishments busy to the practical exclusion of the custom mill. This is now changed, and there is no reason why the latter should not command all that the experience and skill of the best mill builders can suggest. To this end the owner of the small mill should give as full information as possible regarding what he wishes to do, what he has to work with, what results he must obtain, how good flour he must make, etc. His inquiries will then be to some purpose.

The cost of changing a mill, whether large or small, depends so much upon the condition it is in and the work it has to do, and these conditions vary so widely that no one, no matter how extensive his experience, can give an infallible answer, or one which in the majority of instances will be even approximately correct. There has grown up an evil, for which mill-furnishers as well as millers are responsible, which works greatly to the detriment of the mill owner who really wishes to have a good mill. This is the bidding on each little job, without reference to the machinery to be put in, or the results to be attained. In a recent case a mill owner who had received a very low bid for the remodeling of his mill, was asked what guaranty of results he had, and replied that he had nothing except a verbal assurance that it would be all right. What all right means is very indefinite, and if the cheap bid be accepted, as it most likely will, a cheap mill will be built, and the owner will find when he puts his flour on the market, that he has paid dearly for his economy. A cheap mill is like a cheap anything else, no matter how showy it may be or how well it may promise, it will show its cheapness as soon as it is put to actual use. It will cost more at first without question to have a first-class mill, but if it is first-class it will pay in the end. And one thing is certain, a first-class mill cannot be had for a second-class price. Fortunately for the owner of the small mill, he can now obtain good machinery of responsible furnishers, and can have his mill well planned and built, if he is willing to pay a fair—and not an exorbitant—price for it.

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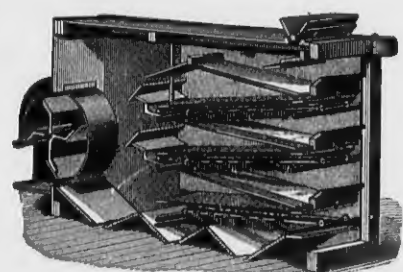
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Roller Milling.

BY G. MEISSNER.

(Translated from the "Austro-Hungarian Miller," for the Corn Trade Journal and Millers' Gazette, (London.)

I. PURPOSE AND ADVANTAGE OF ROLLER MILLING.

The proper purpose of roller milling consists in gaining as much *fine white flour* as possible out of a given quantity of wheat.

As is well known, millstones used in the general way, do not produce so large a quantity of white flour (in comparison with the amount of such flour contained in the grain,) because the bran (the outer tough coating of the wheat berry) has been rubbed partially into a fine powder between the stones, and has in consequence of its brown particles, imparted to the flour a more or less dark color.

These brown bran-particles cannot be separated from the flour, because they are of the same size as the flour particles, and have also nearly the same specific weight. A separation of these two particles by means of wind is therefore, for such small size, no longer possible. In larger pieces the bran is indeed specifically lighter than the flour particles or the middlings, and the former can therefore easily be separated by means of suction or blast. The separation of the fine pulverized bran from the flour itself is, however, impossible.

In order to avoid the pulverization of bran on millstones it was found necessary to moisten the grain before grinding, because the hard brittle bran becomes more tough by taking up moisture, and it therefore keeps better together. This moistening, however, also causes the resulting flour to be moist; this latter therefore does not keep and must be used up quickly, or else it will turn grey and musty and be spoiled altogether.

The distinguishing feature of roller milling now consists in working the thoroughly dry grain in such a manner that the grain is not pulverized, and thus the whole white contents of the grain is obtained free or nearly free from bran.

In consequence, as is proved by practical experience, from eight to ten per cent more *white grades* of flour are obtained (there are about ten distinct grades in Austria and Germany,) and generally much finer and whiter flour is produced than can be made by millstones.

There are millers who believe that in roller milling so-called *dead* flours (crushed to impalpable powder) are obtained.

This idea is based on a faulty knowledge of the mode of grinding which is used in roller milling.

We shall find later on that roller mill flours are just as granular as those made by millstones.

Indeed it is even possible to make more granular flour by means of roller mills than by stones, if the proper attention is bestowed on this point and the mill is arranged accordingly.

II. THE NATIONAL ECONOMICAL VALUE OF ROLLER MILLING.

It might appear from superficial examination of the subject, that it is economically wrong to produce so much white flour (free from bran) because bran contains so much more nutritious parts (about 25 per cent more,) like gluten, etc., than the other parts of the wheat berry.

However, these nutritious parts of the tough bran are contained in such a form that they can only be digested and assimilated with great difficulty, and but few men really assimilate these nutritious parts in the blood.

The value of an article of food does not merely depend on its contents of nutritive parts, but it depends essentially on the state or form in which it contains this matter, whether it suits our human organism, that is whether our stomach can easily digest and assimilate it.

This latter is not the case with the bran, and it is therefore certainly better to feed the cattle with our bran (they have stronger digestive organs, and for them bran is good food,) and afterwards to eat the meat and the milk of these animals, thereby receiving the nutritious parts of the bran in another form which is specially adapted for our organism.

A national economical disadvantage is not therefore combined with roller milling; this would only be the case if the bran were entirely thrown away, which is nowhere the case.

It cannot be denied that bread made from white flour, although it may contain less nutritious parts, is far better adapted for the digestive apparatus of the human organism, than bread from dark flour.

This may be accounted for, in addition to the above mentioned reasons, by the fact that white bread remains *spongy* when in contact with water, whereas the brown (dark) bread forms dough-balls, and in this state (without taking account of the bran) it is very indigestible.

It is a fact that not only rich people like white bread, but that particularly the hard working lower classes prefer it to the brown bread.

A national economical disadvantage cannot therefore be found in roller milling.

It is another fact that everybody would prefer to take a quantity of white bread than a similar quantity of brown bread, provided he could get it for the same money. It ought therefore to be the aim of every miller to produce as much white flour as possible from a given quantity of grain. The best means for this purpose is roller milling.

It must not however be thought that it is sufficient to put merely roller mills in the place of millstones; the mode of grinding must be arranged according to quite another system if the introduction of roller mills is intended to be really useful.

III. THE GRINDING SYSTEM OF ROLLER MILLING.

If grain is passed between fluted iron rollers it is not so much torn to pieces, but rather crushed into several pieces, whereby at the same time the bran is detached in flakes without being rubbed into powder.

These detached bran flakes can then easily be separated from the other parts of the grain by means of suction or blast, because the bran when not pulverized, is specifically lighter than the berry.

In order to make this separation of bran perfect it is only necessary to take care that the bran is never rubbed into powder, but that it always forms pieces of not too small a size. The separation of the bran will be so much easier accomplished, the more gradual the reduction of the grain takes place, whereby the coating of the grain severs its connection from the white particles more easily.

This is the working method of roller milling. The grain is first passed, in a perfectly dry state, through a pair of coarse fluted rolls set at such a distance that the grains are only slightly cracked, and the bran does not lose its integrity.

The inside of the grain, which is more or less brittle, is thereby of course divided into pieces of different size which will fall out of the coating.

The less broken particles of the reduced grains are then separated in wire dressing cylinders from the finer particles. The still larger particles (containing the bran) are then passed through a second pair of rollers, set a little closer and fluted a little finer, which will reduce the broken grains into somewhat smaller particles, without however reducing the bran much.

After the finer particles have again been separated in a wire cylinder, the coarser parts are passed through a third pair of rollers, set closer and fluted finer, which continues the reduction without reducing the bran.

The inner parts of the grain are thereby separated from the coating, so that after the grain has been passed from four to six times through the rolls, in the described manner between rolls set successively closer and fluted finer, the whole contents of the grain have been detached from the coating, which remains as a soft spongy mass.

By separating from these broken grain particles (which have been so to say picked out of the coating) the small detached bran flakes, and then grinding them, a fine white flour, free from bran, is obtained. In reality however, the separating process does not progress so undisturbed as here described. During the passage through the rollers many bran particles are detached, but as long as they are not too fine they can be easily separated by means of wind, from the inner parts of the grain.

Special care must be taken not to allow the clean bran particles, which have already been detached, to pass between the succeeding rollers, because they would there only be further reduced. This is the reason why it is necessary to dress the meal after each passage through the rolls, to separate the finer particles from the coarser ones in order to submit only these latter to a further reduction in the succeeding rollers.

A certain number of different stages of reduction is therefore unavoidable, because that which remains as bran after the different passages through the rollers, only forms the offal of the main product.

As will be seen from the above, it is not intended to make flour during the described

reductions, but only to divide the grain into small pieces (middlings) and to separate the bran.

This property of the fluted rolls, to produce not flour but middlings, forms their essential advantage, without which they would be nearly valueless.

Of course some flour is produced during the described operations, but only very little; the bulk of the products are different sorts of middlings and bran.

IV. THE DIFFERENCE IN THE WORKING MODE OF ROLLERS AND MILLSTONES.

Roller mills not only have the advantage of working in a better manner than millstones, but also treat the grain after quite a different method.

Millstones are undoubtedly excellently adapted to rub a substance to a fine powder, but this is not intended to be done, in grinding grain, until all bran (or at least the largest part of it) has been separated from the meal. As soon, however, as the separation of the bran has been once achieved in a perfect manner, the pure parts of the grains can be very well ground on millstones, because a pulverization of bran cannot in this case take place. Indeed millstones are probably much better for such a grinding process than the rollers themselves. For if pure middlings are passed between smooth rollers, however strongly they may be pressed together, there will always be after such passage through the rollers, a larger amount of unreduced tailings than would occur after a reduction by stones.

V. CHILLED IRON ROLLS AND PORCELAIN ROLLS.

It must be mentioned that rollers working under great pressure, require much motive power, whereas on the other hand the ordinary fluted rollers require but little power to drive them.

As a natural consequence the entire pulverization of a grain requires a certain amount of working surface, which roller mills do not possess, although in millstones sufficient surface is available for such purposes.

From this it follows that the preparatory treatment of the grain, the so-called granulation, that is the reduction of the grain into small pieces, without thereby pulverizing the bran, can best be achieved by means of fluted chilled iron rollers, or fluted rollers of any other material of great resistance, whereas the grinding of the purified (freed from bran) middlings and semolina can best be treated by means of millstones.

Rollers should not be used for everything, for millstones have very many advantages for grinding middlings into flour, whereas on the other hand rollers have an inestimable value for granulating and reducing middlings.

Rollers and millstones are not in opposition to each other, but they complete each other.

The practice has thoroughly confirmed this fact, for in all newly erected mills—for instance, Buda Pesth and other places—the granulation and the reduction of middlings is done by fluted chilled iron rollers, whereas the final reduction of middlings and semolina to flour is done without exception on millstones.

About the question whether chilled iron or porcelain ought to be used in roller milling, whole books have been written by interested gentlemen, whereby the question has not at all been solved but only further complicated.

It might be asked with the same reason, whether the man or the woman is more useful to the world. The question is a very simple one, if not looked at through partial spectacles.

If grain is passed between the smooth rollers, made from any material, it will thereby be crushed, but the crushed mass is not divided into pieces. In order to obtain the latter effect it is necessary that one of the rollers moves quicker than the other one. If both rollers in this operation are perfectly smooth and if they are set close together they will not draw in the grain intended to be passed through them.

In order to accomplish this drawing in, it is necessary for the treatment of whole grains and large pieces of the same, to flute the rollers. It is not important, for this object, whether the flutes are straight (parallel with the axis) or whether they form an angle with the axis, but the shape of the flutes has an essential influence on the facility and certainty with which the drawing in of the grinding material (whole grains or breaks) between the rollers is effected.

Those flutes, which are arranged so that one roller advances before the other one, have proved themselves to be most efficient. The rollers, the flutes of which are shaped

like the teeth of a saw, then cut so to say, against each other, that is as if the one roller where standing still and the other roller moved against it. These flutes are also better adapted for wear than the symmetrical flutes. For even if the sharp edges of these flutes have been worn away, they will still draw in well and indeed better than the straight flutes.

It is self-evident that these fluted rollers must be made from a hard material of great resistance, and that porcelain is unsuitable for this purpose, that is for fluted rollers, need hardly be mentioned.

Porcelain, of the proper quality used for smooth rollers, may be excellent, but they cannot be fluted, and they cannot therefore be used with advantage for granulating and reducing coarse middlings.

Steel and chilled iron have proved themselves most suitable for fluted rollers; the latter is cast iron which has been converted into steel by reducing its surplus contents of carbon. These materials have been used in roller milling for more than twenty years, and they have proved superior to all other experimentally tried materials, and there is indeed no other material but steel and chilled iron which is hard and at the same time tough. This is why in engineering these two materials are used everywhere where resistance and durability are of the greatest importance.

Nobody would be foolish enough to make a drill, a chisel, a roller mill and similar things from any other material but steel and chilled iron, and therefore, it is also undoubtedly the best material for fluted roller mills.

Experience has proved this to be true. It must not, however, be understood from this, that porcelain rolls cannot be used advantageously in milling, but as fluted rollers, which are necessary for the granulation of grain, they cannot be employed. Very useful on the other hand are porcelain rolls for reducing middlings and for finishing the reduced middlings and semolina. For in the best arranged mills the middlings which have been produced by fluted rollers are not at once ground to flour, but before finishing them, they are in from two to five passages further reduced, not into flour but into small pieces, to semolina—called "Dunst" in Austria and Germany.

The middlings produced during the granulating or breaking process, contain still a large amount of pieces broken from the grain to which parts of the bran coating are still adhering, so that it is not possible to separate the latter by means of blast or suction. If it is therefore intended to separate also these adhering small bran particles, as is necessary for the production of fine white flours, it becomes necessary to reduce these middlings still further, that is to divide them into finer middlings and then to purify them by means of blast or suction, that is to separate the small bran particles before grinding them to flour. In smaller mills middlings are reduced once or twice; in larger mills from two to three times, and in very large commercial mills up to five times. These fine reductions are called semolina—"Dunst."

This reduction of coarse middlings into finer middlings and semolina must be done on smooth rollers, because the particles are already too small for fluted rollers, which they would pass without being reduced.

For the first reduction of coarse middlings however, or where only one reduction is in use, very fine fluted rollers can be used with advantage; for all subsequent reductions, however, smooth rollers are required.

Porcelain rollers may be employed with great advantage for this purpose, although the reductions can also be accomplished very well by means of smooth chilled iron rollers. The porcelain rolls draw in a little easier than smooth chilled iron on account of the fine natural grit of their surface, although experience also shows the chilled iron to have its advantages. It is really very difficult to decide which is the most advantageous for this purpose, and probably both are of equal value.

The manufacturers of porcelain rollers of course claim superior advantages for the porcelain and so do the manufacturers of chilled iron rolls for chilled iron.

It is however, true that in porcelain, roller mills the rollers will sometimes burst, and also that sometimes small pieces break from their surface; such mishaps do not occur with chilled iron, and as it is necessary to use chilled iron for granulating, it seems only natural to give the preference also for reductions to chilled iron.

It may be further mentioned that all great Austrian mills, and especially the Buda Pesh

mills, use chilled iron without exception.

With regard to grinding or finishing the purified middlings and the semolina to flour, rollers cannot be recommended. Of course such grinding may be forcibly accomplished by means of rollers, but millstones are undoubtedly much better adapted for this purpose. The working surface of rollers is too small, and even if the rollers are very strongly pressed against each other, be they of porcelain or chilled iron, there is always a proportion of middlings and semolina in the tailings which must at last be treated on a millstone.

As already mentioned, however, the grinding can be forcibly accomplished by means of rollers alone, although with an amount of power quite out of proportion. This point has also been decided by experience, and all well-equipped mills in Switzerland and Austria (in Buda Pesh without exception), finish by means of millstones.

Should it, however, be intended to finish by means of rollers, it would be preferable, for this purpose, to use porcelain instead of chilled iron, because the former is better adapted for grinding, on account of its fine grain and the natural roughness of its surface. It would produce more flour and not so much semolina—"Dunst"—and tailings.

For in the finishing process it is intended to grind and rub the material into fine powder (flour) and not to further sub-divide it into smaller pieces.

Therefore, if the porcelain rolls are more advantageous for the finishing or grinding process, they are less advantageous for the reduction of middlings and semolina, because during those reductions the production of flour is not yet desired.

During the reduction of middlings it is not intended to produce flour, but to produce very fine middlings or semolina, from which the bran can be separated on special purifiers by means of blast or suction.

One and the same roller mill cannot therefore possibly be used for both processes, because it cannot be equally well adapted for reducing as it is for grinding. That which is desired in the first operation must be avoided in the second.

A firm which makes only porcelain roller mills occupies a peculiar position in regard to these facts, because their manufacture is unsuitable for granulating.

These firms therefore, in order not to make room for chilled rollers for granulating, try to suppress the granulating process as much as possible, which they represent as not essential and easily to be accomplished by millstones.

This manner of advancing their interests is, of course favorable for their own prospects, but the milling interest is not much benefited thereby, because the granulating process is the backbone of modern milling, it is a most important process, and what is spoiled in this, the beginning of the whole milling process, cannot afterwards be remedied.

VI. THE CONVERSION OF OLD MILLS AND THE ARRANGEMENT OF NEW MILLS FOR ROLLER MILLING.

It will therefore be found advisable, when planning a new mill, not to be wholly influenced by the prospectus of milling machinery manufacturers and their agents, but to take regard of the lessons which experience has taught about the main principles. That is, to adopt a similar arrangement to that which has been found to answer best in the larger mills, especially in Austria-Hungary and Germany—particularly in Buda Pesh.

This arrangement consists of the following main features:—

1. To accomplish the granulating (middlings producing) process by means of fluted chilled iron rollers.
2. To reduce the middlings by means of smooth chilled iron rollers or porcelain rollers.
3. To grind or finish the purified middlings and purified semolina by means of millstones or porcelain rollers.

This milling method is specially suitable for the conversion of existing mills to the roller milling system, because the whole existing plant can be incorporated with a few slight alterations. It is only necessary to erect the required number of breaks and reducing rollers in a suitable place, available in most mills. The conversion of an existing mill becomes thus a much less expensive affair than it would be if it were attempted to accomplish also the grinding or finishing process by means of rollers, in which latter case it would become necessary to remove nearly all the entire existing arrangement of millstones and their appurtenances.

This modification of the installation of roller milling with the retention of existing machinery, much facilitates the conversion of old mills into modern milling plants, because, besides this, in these latter, a larger number of dressing machines, elevators and worms are required than old millers are accustomed to see.

There are very many millers who are strongly prejudiced against conveying apparatuses, because they know from experience that worms and elevators are the chief causes of undesirable stoppages in the regular working of a mill. But it must not be omitted to state that in the newer milling plants fewer stoppages take place, notwithstanding their greater complication, than in the older mills, and and mainly because much more care is bestowed on the construction and driving of conveying apparatus than was generally formerly the case. Therefore in modern roller milling plants the use of conveyors is not so carefully avoided, although, of course, their number is always reduced to the lowest possible limit.

What Sam. Chisholm has to say about Milling.

[Continued from September.]

Mr. Jonathan Mills, the inventor of the machines which bear his name, had a full knowledge of the difficulties in the way of using either millstones or rolls for reducing wheat to middlings, and he has combined in his invention the qualities of both burrs and rolls which were suitable for the purpose, and avoided those qualities which were disadvantageous. For instance, the objection to the use of the ordinary millstones for the reduction of wheat is threefold:—1st, the inherent quality of the burrstone itself, which necessarily comminutes or abrades the bran; 2d, the unwieldy size of the ordinary millstone; and 3d, the impossibility of perfect and exact adjustment—a matter of the supreme importance in the delicate operation of splitting the wheat, and in the equally delicate one of reducing the wheat equally and uniformly at each stage. Of course the size and adjustment may be overcome at large expense and with great care; but the number of mills where the millstone would receive adequate attention is too small to be taken into account. The advantages of the millstone for gradual reduction, on the other hand, providing its abrasive quality could be overcome, are 1st, its form and simplicity of mechanism, and 2d, its motion, or rather the motion which it imparts to the material which is conducive to the end in view, viz.: the disintegration of the material into its component round middlings particles without, their pulverization into flour.

The disadvantage of rolls for reducing wheat to middlings consists chiefly in the principle of their operation, which renders it impossible for them to split the wheat as before described, and the unavoidable comminution of the bran; besides, I might mention the large number of bearings, the difficulty of adjusting the rolls and keeping them true to each other, in order to accomplish regular and even work.

In employing a chilled iron disc of small diameter (16 inches), and capable of positive and perfect adjustment, the inventor combined all the desirable qualities of both millstones and rolls, and at the same time avoided the disadvantages of both. The features of these gradual reduction machines are probably familiar to some of my hearers; but as some may not be acquainted with their distinguishing characteristics, a resume of those points which make them pre-eminently the best appliances for gradual reduction that have yet appeared, will not be out of place.

The degerminator is but a modification of the reduction machine in the dress of the discs, and so these two machines may be treated as one.

In general appearance the Mills machine is that of a splendidly constructed portable mill of medium size. It is made wholly of iron and steel, and the working parts consist essentially of two discs, each sixteen inches in diameter, with rounded, margined corrugations, having perfectly smooth faces. Both discs are depressed in the face from the centre to within about four inches of the periphery, so as to leave space for the passage of the grain in a horizontal position. The upper disc is stationary, while the lower disc runs. The entire surface of both these discs is polished perfectly smooth, and all sharp or cutting angles are rounded off. The skirt of the disc is divided into ridges or corrugations which, like the rest of the face, are smooth, and their angles rounded off. Each of the ridges is about five-eighths of an inch wide at

the periphery of the disc, and their inner ends slope with a gentle inclination to the level of the depressed bosom before mentioned. A series of furrows lead the material out to the ridges or corrugations, where the work of the machine is done. In mechanical construction the machine is perfect in all its details.

By the united action of centrifugal force and the bosom furrows or leaders, grain fed to the machine is gradually led into the depressions between the ridges, where, by reason of the shallowness of these depressions, it is received in a horizontal position. In this attitude it is made to rise the easy incline of the ridges by the motion of the surface on which it rests, and in rising it is rotated on its own axis until it bears with its creased side on one or the other of the opposite disc-faces. Since the smallest transverse diameter of the berry lies through the crease, the kernel is held in this relation to the proximating surfaces of the corrugations, and is thereafter slid along one or the other, or both, of these surfaces, until split apart and allowed to escape in half-kernels from the machine.

That a slight pressure, applied by opposite smooth surfaces to a kernel in this position—that is to say, in a position such that one smooth surface bears on the grain at the central point of the arch opposite the crease, and the other surface bears upon the two points of prominence separated by the crease—will serve to force the lobes apart, or to split the berry longitudinally through the crease, is obvious.

It is also obvious that it is necessary both to the slipping movement of the grain upon the disc-surfaces, and to the spreading action upon the disc-surfaces upon the lobes of the grain, that said surfaces shall be extremely smooth; for otherwise they would, in the first instance, rotate the grain out of the position required and described; and in the second, even if that position were accidentally assumed by the berry at the instant of rupture, the lobes would be held together, and the rupture would be parallel with the disc-surfaces, instead of vertical thereto, as in the operation described. It is still further plain that neither in the slipping or gliding movement of the grain upon the polished disc-surfaces, nor in the pressing action by which the berry is longitudinally split, can there be any comminution of the bran.

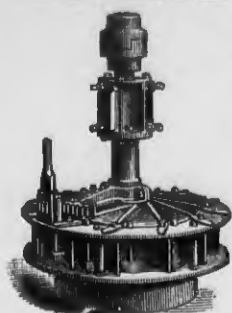
But little of the interior grain substance is dislodged in the operation of degerminating by splitting through the crease, as described, for the reason that each half of the berry so split is still largely enveloped by the bran shell, and also for the reason that only slight pressure, from which disintegration can result, need be applied to the berry to effect the splitting.

Such, in brief, is the operation of the machine as a degerminator, or upon the first "break" of the wheat. It will be seen that in thus liberating the germ and dust at the very outset of the operation, the Jonathan Mills system conforms to what we have seen to be one of the principal requirements of scientific milling, and at the very outset removes a class of impurities which are left to be contended against in future reductions when rolls or millstones are used.

The second reduction by this system is a sort of repetition of the degerming process, and only slightly reduces the split wheat, loosening the germs from any kernels which were not affected by the first operation. The first two reductions are essentially cleaning operations, although a little flour and middlings are scalped out by a wire reel after each of them. Their purpose is not so much to reduce the wheat as to clear it of impurities and put it in a good condition for reduction. At the end of the second reduction, after the broken wheat has been sent to a short scalping reel for separation, and the coarse middlings and germs sent to smooth rolls to flatten out the latter, there remains what might properly be called a quantity of coarse groats, perfectly clean and only needing the separation of the bran. These coarse groats will be found to have been made by breaking the wheat to a very large extent in the direction in which the cells of the bran coatings have their greatest length, and therefore their greatest strength, while the gluten and starch cells have been disturbed in a very slight degree, as is evidenced by the very small amount of flour that has been detached and mixed with the seam impurities.

With such material to work on, we have found three additional reductions sufficient to complete the reduction of the wheat to middlings, although a greater number of reductions could be employed were it found

(Continued on page 91.)



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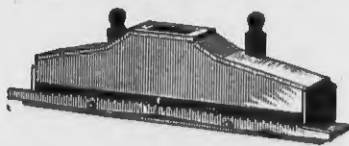
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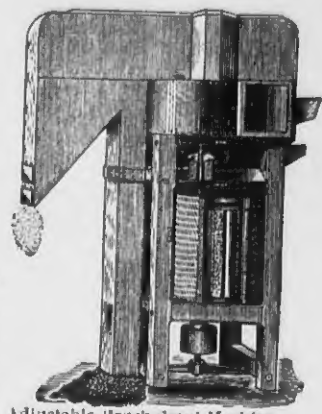
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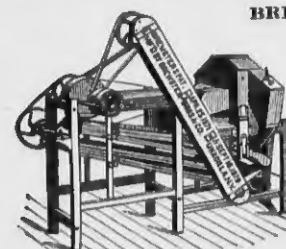
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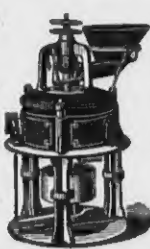
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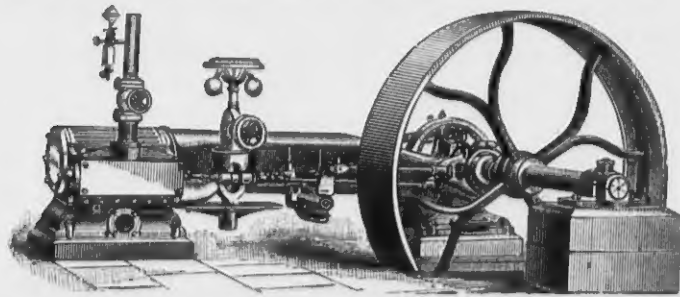
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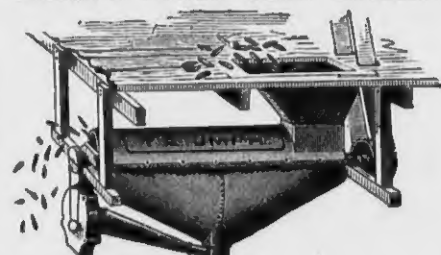
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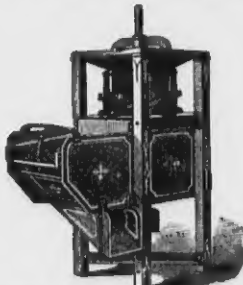
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(Continued from page 88.)

desirable. But these reductions have been found sufficient in practice, and these are accomplished in machines essentially similar to the degerminator. The broken wheat from the scalping reel of the second reduction machine, freed from impurities as above stated, goes successfully through the three machines, the flour and middlings being taken out after each reduction by a scalper, and the residuum being sent to the next machine. The flour and middlings from these three reductions are sent to an ordinary bolting chest, and the middlings and bran obtained from the reductions are treated in any manner deemed best by the millers. Those who have carefully considered my remarks on millstones and rolls, cannot but see the wisdom of thus confining a machine to a single class of work, instead of forcing it to perform work of a varied and essentially antagonistic kind.

In being able to successfully degerm the wheat and remove the seam impurities, the Jonathan Mills machine performs what we have seen millstones and rolls cannot do. Instead of breaking the wheat berry in all sorts of shapes, as rolls and millstones invariably do, the degerminator splits it in a rational manner, by breaking it through its weakest part. By thus liberating these impurities before the real work of reduction commences, one of the principal sources of inferior break flour is avoided. That these machines are superior to fluted rollers for reducing wheat is proved beyond the possibility of successful contradiction, by the fact, that while they make as large a percentage of middlings as any roller or other machine, the "break flour" produced becomes better and better at each successive reduction. It is a fact well known in the markets that the "clear flour" or "break flour" made by the Mills system is exceptionally white and strong, and this fact bears out what could readily be inferred from the construction and operation of his reduction machines.

The smooth surfaces and rounded edges of Mr. Mills' discs carry out to perfection another function of scientific milling besides splitting the wheat through the crease in reducing the lobes of the berry. Their nature effectually prevents the pulverizing or comminution of the bran, and this is another and obvious reason for the superiority of the break flour made in this system. Surfaces so smooth and edges rounded off so perfectly do not cut up or rasp off the bran as millstones or rolls do, but preserve it intact, broken only in such a manner as is necessary to free the middlings and flour from its company.

A fair comparison of the actual work of the three means most commonly used for reducing wheat, viz., the millstone, the roll, and the Jonathan Mills machine, gives the palm to the latter. One reason of this superiority is that the inventor designed his machine for the reduction of wheat alone, and studied most successfully the application of the means to the end. Both the millstone and the roll made their appearance long before the principles of scientific milling were clearly understood, while the Jonathan Mills disc machine was invented expressly to carry out one of the acknowledged purposes of advanced milling. For the gradual reduction of wheat to middlings the use of the roll and millstone is but an adaptation of old and unsuitable means, a makeshift, as it were, instead of being the result of a study of the ends sought, as the disc machine is. It is therefore, that while making as large a percentage of middlings as any system can make, the Mills system produces a clear flour of unexampled whiteness and strength. Nature always rewards with the best results those who follow in the path which science points out. In conforming to scientific principles, the Jonathan Mills system naturally obtains the highest and best results in practice.

THE END.

Transmission of Power.

From Williams & Orton Manufacturing Company, Sterling, Illinois, we have a treatise upon the subject of transmission of power by wire rope, which we recommend to all having need of using power at some distance from its source. We quote the following:

The distance to which wire rope transmissions can be applied ranges from 50 or 60 feet up to miles. "As a magnificent example of long transmission, we would mention that of Schaffhausen in Switzerland, at the Falls of the Rhine. Here 800-horse power is carried diagonally across the Rhine, and extended for a distance of two miles, and distributed among fifty different manufacturing, situated in every imaginable position, and embracing

all the varied arrangements of changing directions."

Wire rope transmission comes into use at a point where a belt or line of shafting becomes too long to be used profitably, and in point of economy it is much cheaper than its equivalent in either shafting or belting.

This method has been largely introduced, with great success, in Europe, for several years past, and is now receiving a rapid development in this country.

Power can, by this method, be transmitted in any desired direction, up or down hill, across rivers, around buildings or obstructions of any kind, and thus make available many sources of power which are now useless. The ropes hang free in air, and require no protection from the weather, excepting an occasional coat of warm, coal tar, which can be applied to the rope by pouring from a can into the groove of the wheel while running; or raw linseed oil can be swabbed on the rope to keep it from rusting, and thereby preserve it.

The ropes run perfectly smooth and noiseless on vulcanized rubber fillings, and are not affected in the least by wet or cold, snow or ice.

In almost every manufacturing establishment it would be convenient at times to transfer power to some isolated building at a distance. A wire rope transmission affords the ready means which commends itself on account of its cheapness, its economy of maintenance, and its perfect reliability under all circumstances.

We now refer the reader to a few of the many permanent applications of wire rope transmissions in Germany and this country, and then proceed to enumerate a few instances where it can be applied with perfect reliability and economy, leaving a long list of applications that may be fitted out as they become suggested to practical thinking men.

"In the neighborhood of Frankfurt-on-the-Main, in Germany, the power of a 100-horse power turbine is conveyed for a distance of 3,200 feet, by means of a wire rope transmission, to a cotton factory, located in the proper place for such a building; wheels of 18½ size of rope ¾ inch. A nearer site for a building could not be found, and this was the only way in which the power could be made available for that purpose."

Hundreds of cases similar to the above might be referred to in Europe, where permanent rope transmissions are numbered by thousands. We have a wire rope transmission in connection with our works, where power is carried a distance of only 60 feet. This distance is about the limit for short transmission. However, by this short transmission, fully 10-horse power is conveyed from our machine shop building across to our foundry, running a large blower and the machinery connected with our foundry department in the most reliable and satisfactory manner. This transmission is made on five-foot diameter sheaves, running at 90 revolutions per minute, and ¾ inch diameter rope.

At a large distillery in this city may be seen in operation two wire rope transmissions. Here, in the first instance, two slender ropes are seen issuing through the casing of the attic window of the main building, and running high in the air to the cupola of the malt house, some 200 feet distant. To the casual observer the motion or use of these two small ropes would not be detected; but on a closer inspection, they are found to be constantly running the elevators and machinery of the large malt and storehouse. In the second instance, power is transmitted to a large bonded warehouse, and thence to a cooper shop, some 400 feet distant.

A manufacturer of this city is carrying 20-horse power a distance of 250 feet from water wheel to factory, running saws, planers, shapers, etc., by 7 foot sheaves and ¾ rope, sheaves running at 80 revolutions per minute. Double above power can be carried if desired, and transmission has been running eight years. The rope runs over the race, the adjoining property and a street, and were it put up right would be a pretty exhibition of this plan; but sheaves are not true on shafts, and are out of line, so that the rope and filling wear away rapidly, a new rope being necessary every fifteen months or so. It ticks continually on side of flange, and instead of wearing a groove into rubber, it saws it off very rapidly.

We mention these transmissions in our city as they come under our daily observation, and at the end of this treatise can be found testimonials and letters that cover nearly every kind and phase of this rapid developing means of carrying power.

In many localities where a good and reliable water power can be obtained, steep or uneven

banks forbid the erection of buildings in the immediate vicinity. Now in such cases rope transmission furnishes a complete remedy. The power can be conveyed by this medium up stream or down, up an ascent or down a hill as well, or in many cases across the stream. In the latter case, where the stream is too wide to span without, an artificial foundation for an intermediate station can be put in, and carrying sheaves be put on same.

In streams that are subject to heavy running ice in spring, a stone pier, similar in construction to an ordinary bridge pier, can be put in, and thus form a permanent transmission.

In streams that are not subject to heavy ice, a dirt embankment or artificial island can be filled in and "rip-rapped" with loose stone. On this embankment may be erected a wooden frame work for an intermediate station.

On the other hand, there are many valuable water powers on streams that are subject to extreme high water, and where the banks in the vicinity of the power are too low and at such times covered with water. Here the wire rope comes into play, as the factory or mill can be placed higher up or lower down the stream, or out on the high table land in the distance. As shown by some of the testimonials, the better health and comfort of the millers, and cheapness and preservation of mill are obtained by setting the mill away from water and carrying power by wire rope.

Take another case: Your neighbor a few blocks away, or perchance across the street, has a surplus of power, while you are "short," or working by hand. Now this latent power of your neighbor's would be of great value to you if, by some application, it could be brought into your building with but little trouble or expense, and with no detriment or interference to any one. You ascertain that by making your own application, this power may be rented for a nominal sum. You now have your remedy, and through a couple of wooden panes in a window, or slits in the window casing, you can run your wire rope high over the heads of the passers-by, to your utmost satisfaction and profit.

It can be profitably employed in pumping wheel pits, coffer-dams, stone quarries, and all sorts of contractors' grading, excavating or building operations. A current wheel may be put in a swift place in the stream, and the power conveyed to a pump or other machinery at a distance.

This plan of carrying power is very profitably used in cotton-ginning, hay-pressing, and other cases where it is desirable to set the engine and boiler at a safe distance away to prevent danger from fire. In any establishment using steam power, the insurance can be lessened by this means; besides the fact that a total loss can never be fully covered by insurance, and the delay of business and lying idle of capital while rebuilding. We are furnishing transmissions for above purposes, setting the mills, etc., away from engine and boilers.

In short, wire rope transmission can be applied with great profit and economy in almost every instance where the distance exceeds 100 feet, and in many cases where the distance is as short as 50 or 60 feet. The main feature however, in wire rope transmission is distance, and the longer the line the better it will work.

Ship-building in Maine.

The Lewiston Journal in speaking of the ship-building industries of Bath, Me., states that last year that city built fifty-five vessels, of a tonnage of 36,334.13 tons, or three-fifths of all the tonnage built in New England during the year. The value of these fifty-five vessels is nearly \$2,000,000. It is expected that nearly seventy-five vessels will be built in Bath this year. Nearly 2000 men are employed in the shipyards.

The Journal gives an interesting picture of a Maine shipyard. It says: There is no place for a drone in shipyards. There is no more lively place in the world. There or four hundred brawny men, with their tools, in the open air make a harmony of workmenlike noises which fall cheerfully on the ear. It is a greatful hubbub and a methodical hurly-burly. An observer gets the impression of combined hurry, order and thoroughness from the scenes around him. Here, carpenters are hewing chips upon chips with their sharp, broad-axes; a dozen broad-backed fellows have a heavy timber on their shoulders and are carrying it across the yard, the joiners are busily plying their planes; strong-armed men are tirelessly swinging glittering adzes—one of them told us he had done nothing but swing an adze for eight years; mallets plating chisels and mallets driving

trunnels keep up a steady, machine-like clicking; round-shouldered men are carrying pails of pitch; the caulkers are a noisy set of fellows and play an accompaniment to the sledges and anvils of the blacksmiths; sleek oxen are laboriously pulling or lifting with tackles; a cloud of steam from the puffing steam mill where the planks and knees are sawed, floats over all. A great many of the men in the yards are veterans and have swung the broad-axe till they are stoop-shouldered.

The first process in ship-building is laying the keel. The keel is made of oak, maple or some such unyielding timber. The timbers in the keel are firmly bound together with iron. The next thing is to set the frame, the huge ribs of the vessel. The frame is then sealed—planked inside. It is then decked. Then it is planked outside, and is ready for the caulking, the painting and the general finishing. The masts are generally set and the vessel rigged after she has been launched. The white oak used largely in the keels, planks, etc., of the vessel comes from Virginia, chiefly. The yellow pine used in the deck comes from Georgia and Florida. The hackmatack for the vessels knees is cut in our own woods and so are many of the spars. The masts are cut in tall-treed Oregon. Every part of the vessel's sides between the keel and the deck is filled with Liverpool salt, to keep her timbers from rotting. It comes into Bath by the shipload for this purpose. The sealing is fastened to the frame with iron bolts. The decks timbers are secured with great spikes, and the planking is fastened with copper spikes, bolts and trunnels of locust wood. The caulking is done with pitch and oakum. All the work on a vessel is sub-let to master-carpenters, master-joiners, etc. All the carpentering, joinery, ironing, caulking, rigging, etc., are done at a certain rate per ton by the master-workmen, who hire men by the day and have full sway over them. The master work-man may be running crews on several vessels at once. This method simplifies business for the building firm.

Good master-workmen are paid \$5 per day. Carpenters and joiners are paid \$2.50 to \$3 a day, according to their intelligence and skill. Not so many young men are learning the trade as in days gone by. "How long a term of service is necessary to acquire the craft of the ship-carpenter?" asks the reporter. "Some men can never learn it; others will become good workmen in three years," said the man of ships. Caulkers are paid hardly so high wages. Professional riggers are paid about \$2 per day. They are not numerous and a great many sailors are pressed into the service.

The models for nearly all the ships built in Bath are made by William Pettee. Generations of Pettees have made ship models since time out of mind. One may find in Mr. Pettee's storehouse many cords of miniature ships and schooners, the images of the vessels launched in Bath in the last half-century. J. T. Donnel & Co. carry on in Bath the only rope-walk in Maine, and employ fifty hands. The anchors for the vessels are forged chiefly in Camden. The sails are made in New Bedford.

The amount and value of the tonnage owned in Bath are enormous, although they represent a small part of the wealth of that city; 315 vessels, of a total burden of 169,717.54 tons, are owned by the Bath citizens. The value of this shipping, averaged at \$22 per ton, a low estimate, is \$3,633,774. On these vessels 769 officers and 2342 sailors—a total of 3112 men—are employed. By Bath's shipping interests and the numerous industries which branch from it, employment is given to 6000 or more able-bodied men, on land and sea.

Items of Interest.

An elevator bucket attachment invented by George L. Lord, Waupaca, Wis., consists of two nuts which are firmly secured to the inner surface of the bucket, and two flat-headed bolts which pass through the belt and engage with the nuts.

Last August the Kinzua Viaduct, the highest railway bridge in the world, was completed, a year from the time it was commenced. It is situated in McKean County Pa., about four miles from Alton, and its construction was ordered by the New York, Lake Erie & Western Railway Company. According to an article in the Scientific American, this bridge is 2051 feet long and 301 feet high. It has twenty spans sixty-one feet long, one 62 feet long alternating with the lower spans, which are 38½ feet each. The truss, being high and ten feet wide, and continuous from six feet one end to the other, is supported by col-

umns one foot thick, which increase in length toward the middle of the bridge. They spread out with a batter of two inches to the foot, columns of the highest bents at the bottom. The two longest bents rest on two long piers, with pedestals built on each side of the stream, each containing about 500 yards of masonry. All the other columns rest on piers containing from twenty to 125 yards of masonry. The bridge contains 4,000,000 pounds of iron and 7000 yards of masonry. Its cost was about \$300,000.

TREATMENT OF DIPHTHERIA.—The *Medical Press* says that Dr. Deuker, who, during 24 years of very extensive practice in the Children's Hospital, St. Petersburg, has treated upward of two thousand cases of diphtheria, and tried all the remedies, both internal and external, employed in this affection, has obtained the best results from the following method, which he has employed for the last ten years. As soon as the white spots appear on the tonsils he gives a laxative mainly composed of senna, which produces an abundant evacuation. When the purgative effect has ceased he gives cold drinks, acidulated with hydrochloric acid, and every two hours a gargle composed of lime water and hot milk in equal parts. Dr. Deuker affirms that when this treatment is commenced early, it is generally and rapidly successful.

Krupp's steel works at Essen, Germany, were founded by the father of the present proprietor in 1810. The present proprietor took the work on his own account in 1848, the number of workmen employed being then not more than 74. In 1880 the number had reached 8679, and is at present 10,600. The mines and ironworks had in 1880 an additional number of workmen, numbering 7103; the number employed by all Krupp's works being in 1880 a total of 15,782, and it is at present higher. In the steel works there are 1542 furnaces of different kinds, 294 generators of steam, 82 steam-hammers of from two hundredweight to 50 tons; 310 steam engines of from 2-horse power to 1000-horse power, with a total of 12,000-horse power; 1622 machine tools of different kinds. Including the steamers and the metallurgical works, the average daily consumption of the establishment is 2680 tons of coal and coke, 13,000 cubic meters of water, 17,300 cubic meters of gas for lighting (obtained from the gasworks belonging to the establishment.) There are in all 22,235 gas lights. Intercommunication is facilitated by 63½ kilometers of railway, 23 locomotives, 767 wagons, 50 horses, 206 cars, 65 kilometers of telegraph wire and 35 telegraph stations. The works also possess a chemical laboratory, a photographic and lithographic office, a printing office with three steam-presses and five hand-presses, and a fire-brigade of 63 men. There are six works with 14 blast-furnaces, producing 600 tons of iron in 24 hours. The mines are: Four coal mines, 547 iron mines, in Germany, and some in the north of Spain, the average daily production being 3000 tons of coal and 1600 tons of ore, of which 1200 tons are raised in Germany. The ore is brought from Spain by five steamers.

CHEAP AND SIMPLE REMEDY FOR RHEUMATISM.—A remedy for rheumatism which is both effectual and inexpensive is something which will be sure to earn for its discoverer the gratitude of mankind. The *Canada Medical Record* is authority for the statement that Dr. Wood, Professor of Chemistry, in the medical department of Bishop's College, Montreal, reports a number of cases in which acute articular rheumatism was cured by fasting, usually from four to eight days. In no case was it necessary to fast more than ten days. Less positive results were obtained in cases of chronic rheumatism. The patients were allowed to drink freely of cold water, or lemonade in moderate quantities if they preferred. No medicines were given. Dr. Wood says that from the quick and almost invariably good results obtained by simple abstinence from food in more than forty cases in his own practice, he is inclined to believe that rheumatism is, after all, only a phase of indigestion, to be cured by giving complete and continued rest to all the viscera.

PROPELLING STREET CARS BY STEEL SPRINGS.—It is reported that recent experiments in Philadelphia have proved that it is possible to propel street cars smoothly and rapidly by the expansion of powerful steel springs, the difficulty of giving a uniform and perfect temper to the metal having been overcome. The company controlling the patents make the following claims: The motor consists of six springs coiled upon a cylinder. Each spring will be made of a flat bar of steel, 300 feet long, 6 inches wide and ¼ inch thick.

These springs are tempered by the new process so uniformly and so delicately that their power becomes tremendous. After first being coiled so that their diameter is 18 feet, they are tempered and then wound up until the diameter is 7½ feet. In this condition they are placed upon the motor truck and the appliance of the patents adjusted. A stationary engine at the terminus of the road then winds the springs to a diameter of 40 inches, and it has been demonstrated that the power of the expansion of the six springs, from 40 inches to 7½ feet, in diameter is sufficient to drive an ordinary street car, full of people, five miles on any track in Philadelphia. The springs are so entirely under the control of the brakeman that he can use the power of all of them at once or limit the power to one, or in going down a steep grade he can shut them all off. A check prevents the car from running at a greater speed than nine miles an hour.

NEWS.

A grist mill is soon to be erected at Kiel, Wis. BURNED out. Crow Bros & Co's mill, at Paris, Mo.

BURNED out. W. R. Evan's mill, Jefferson, N. H.

WHIPPLE & HARKER, of Deerfield, Ind., have sold out.

JAMES WILSON & Co., Rochester, N. Y., have dissolved.

POLLACH's flour mill at B'uffton, Wis., burned last week.

THE flour mill is nearly ready for work at Aberdeen, Dak.

BURNED out. Miller & Henderson's mill at Wilkesville, Ohio.

RUSSELL, DAILEY & Co., Crestline, Ohio, have dissolved partnership.

GRABER & Co., of Waxahachie, Tex., will build a two-run mill.

L. W. TUBBS, Emerson, Iowa, has sold out to the Emerson Milling Co.

VAN VALKENBURG & Co., are building a grain elevator at Cedarburg, Wis.

BURNED out. Seth P. H. Hale's mill at Hubbardstown, Mass. Insured.

NEWTON & ORTON, Lane, Kansas, are succeeded by Newton & Alward.

CHARLES BURTCH & Co., Webberville, Mich., have sold out to V. C. Dixon.

DAVIS BROS., of Minerva, O., have ordered a line of the Odell roller Mills.

A new four-run mill will be built at Clearfield, Pa., by R. McPherson.

C. C. WHITE, of Valparaiso, Neb., has decided upon further enlarging his mill.

BURNED out. The mill of Moir, Son & Co, Bedford, Nova Scotia; partly insured.

BURNED—Sept. 12, the Crescent Mill and Elevator at Denver, Col. Loss \$225,000.

BURNED out. W. B. Dodge's 200 barrel flour mill at Montello, Wis. No insurance.

BURNED out. Baily & Mill's flour mill at Iroquois, Ontario—Canada. Insured.

THE office of the *St. Louis Miller* recently narrowly escaped destruction by fire.

H. C. EVANS & Co. are progressing finely with their new flour mill at Chattanooga, Tenn.

HENRY L. VALBURG & Co., of Ingle Station, Ind., has ordered an Odell Roller Mill for bran.

WM. & JNO. HAYTER are commencing the erection of a water power mill at Ainsworth, Neb.

BURNED out. John W. Carr & Son's flour mill at Hamilton, Ohio. Loss \$18,000, insured for \$8,000.

WILL SHEA's mill at Newbern, Ind., is having important additions, necessitated by his growing trade.

WHEELER & WICHTER, Appleton, Wis., have dissolved partnership. M. A. Wheeler succeeds.

THE firm name of Geo. W. Adams, Rochester, Mich., has been changed to Geo. W. Adams & Son.

JONES, Ballard & Ballard's mill, at Louisville, Kentucky, was damaged by fire to the extent of \$5,000.

THE firm name of Maxwell Bros. of Millersburg, Ohio, has been changed to Maxwell, Stevens & Co.

W. G. BEED, of Hampton, Iowa, has ordered of the Case Mfg. Co. first break machines and scalpels.

HENRY VAHLBURG, Evansville, Ind., has purchased some machinery of the Case Mfg. Co., Columbus, Ohio.

WM. BRENNER, of Atlanta, Ga., has ordered the Little Giant Break Machines from the Case Mfg. Co., Columbus, Ohio.

THE Midland (Mich.) Milling Co., a new organization, have commenced the erection of a 125-barrel roller mill.

A. A. PEARSE, of Bakers Mill, O., is putting in a lot of machinery furnished by the Case Mfg. Co., Columbus, Ohio.

THE Case Mfg. Co., Columbus, O., are furnishing L. C. Prunty, of Laclede, Kansas, with some new machinery.

BANKS & SWENY, of Blackburn, Mo., are putting in new machines furnished by the Case Mfg. Co., Columbus, O.

C. A. SMITH, of Lebanon, Mo., has ordered a set of double 9 x 18 Rolls from E. P. Allis & Co. of Milwaukee, Wis.

Two pairs of 9 x 24 Rolls have been ordered from E. P. Allis & Co., of Milwaukee, Wis., by the Hudnut's, Pekin, Ill.

THE Stilwell & Bierce Mfg. Co., of Dayton, Ohio, have taken the order for a full line of the Odell rolls for the mill of E. & G. Brooke, Birdsboro, Pa. The diagram for the mill is to be furnished by Mr. Odell.

J. T. HALTEMAN & Co., of St. Louis, Mo., ordered two pairs of 9 x 18 Rolls, from E. P. Allis & Co., of Milwaukee, Wis.

A Chattanooga, Tenn., grain dealer has purchased 160,000 bushels of wheat for shipment to Chicago and Milwaukee.

MR. ISAAC JONES retires from the milling firm of Gates & Jones, Roseburgh, Oregon, and T. J. Critser is admitted.

TREMAN & MOSS, Mecklenburgh, N. Y., have dissolved partnership. The business will be continued by F. W. Treman.

L. N. CRILL & Co., of Richland, Dakota, are putting in new machinery furnished by the Case Mfg. Co., Columbus, Ohio.

ADAM G. GROFF, of Lancaster, Pa., has placed his order with the Case Mfg. Co., Columbus Ohio, for a set of smooth rolls.

THUS far, this year, 5,782 miles of new railroad have been built, against 3,180 miles reported at the corresponding time in 1881.

PLANK BROS., of Wooster, Ohio, have ordered a Double Roller machine, 9 x 18, from E. P. Allis & Co., of Milwaukee, Wis.

E. P. ALLIS & Co., of Milwaukee, Wis., have the order for two pairs of Rolls, 9 x 18, from Coons & Co., Winchester, Ill.

G. W. WOODRUFF, of Columbus, Ga., has ordered two pairs of 9x18 Rolls from E. P. Allis & Co., of Milwaukee, Wis.

J. T. WALTERS, of Easton, Pa., has ordered a Double 9x18 Roller Machine, from E. P. Allis & Co., of Milwaukee, Wis.

E. P. ALLIS & Co., of Milwaukee, Wis., have just received order from O. F. Barber, Golden, Col., for 2 pairs 9x18 Rolls.

J. L. ALLARD, Paducah, Ky., recently ordered one double 9x24 Roller machine, from E. P. Allis & Co., of Milwaukee, Wis.

Two pairs of 9x18 Rolls have been ordered from E. P. Allis & Co., of Milwaukee, Wis., by Geo. A. Klinger, St. Charles, Mo.

D. J. LEW, Rushford, Minn., has ordered recently 2 double 9x18 Roller machines from E. P. Allis & Co., of Milwaukee, Wis.

W. YOUNGER, of Catawauqua, Pa., has ordered from E. P. Allis & Co., of Milwaukee, Wis., one double Roller, 9x18 machine.

E. P. ALLIS & Co., of Milwaukee, Wis., received the order for two pairs of 9x18 Rolls from Knochel Bros., Belleville, Ill.

CHISHOLM BROS. & GUNN, Minneapolis, Minn., have sent order for two pairs of 9x18 Rolls to E. P. Allis & Co., of Milwaukee, Wis.

THE Case Mfg. Co., Columbus, Ohio, are furnishing Geo. G. Smith, San Francisco, Cal., with their Little Giant Break Machines.

C. B. SLATER & Co., of Blanchester, O., have furnished Messrs. Tate & Trollinger at Mebanesville, N. C. with two of the Slater Reels.

Two pairs of 9 x 14 Rolls, have been ordered from E. P. Allis & Co., of Milwaukee, Wis., by Stephen Apper, Theilmantown, Minn.

JOS. KRATOCHWILL, of Dayton, Ohio, has ordered two pairs 9x18, and two pairs 8x14 Rolls from E. P. Allis & Co., of Milwaukee, Wis.

CHISHOLM BROS. & GUNN, of Chicago, Ill., have ordered twelve 9x18 double Roller machines, from E. P. Allis & Co., of Milwaukee, Wis.

DAVID ELLIS & SON, of Indiana, Pa., have ordered a full line of the Odell Roller Mills of the Stilwell & Bierce Mfg. Co., Dayton, Ohio.

VAN VLECK & McARTHUR, manufacturers of mill supplies, Hudson, N. Y., have dissolved, and are succeeded by S. S. & G. P. McArthur.

BURNED—Aug. 30, Danby & Smith's elevator and mill at Moscow, Minn. Loss \$15,000. Insurance \$7,500. Fire supposed to be incendiary.

E. P. ALLIS & Co. of Milwaukee, Wis., received the order for four double 9 x 18 Roller machines from C. A. Gambrell Mfg. Co., Baltimore, Md.

THE mill at Arcadia, Ind., will be much enlarged with machinery now being made by Nurdyke & Marmon Co., of Indianapolis, Ind.

W. W. SNIDER, of Lyons, Iowa, visited Columbus, Ohio, and left his orders with the Case Mfg. Co. for rolls, break machines and scalpels.

A two pair 9x18 Roller machine has been ordered from E. P. Allis & Co., Milwaukee, Wis., by Bierbauer & Hutton, of Fillmore, Minn.

ONE double 9x18 Roller Machine has been ordered from E. P. Allis & Co. of Milwaukee, Wis., by C. A. Donnel & Co., Conway, Iowa.

E. P. ALLIS & Co. of Milwaukee, Wis., have the order for two of their Double Roller machines, from Smith, Stratton, Gifford & Co., Nashville, Tenn.

E. P. ALLIS & Co. of Milwaukee, Wis., have received an order for a double 9x18 Roller machine, from May, Webber & Co., Watertown, Wis.

MESSRS. S. T. EMMONS, of Homer, Mich., recently ordered from E. P. Allis & Co., of Milwaukee, Wis., two pairs of 9x14 Porcelain Rolls.

SIX of Gray's Double Noiseless Belted Roller Mills have been ordered from E. P. Allis & Co., of Milwaukee, Wis., by the Centennial Mill Co., Avoca, Iowa.

HERZOG & ROBERTS, of Racine, Wis., have confirmed an order for 5 double 9x18, and 4 double 9x24 Roller machines to E. P. Allis & Co., of Milwaukee, Wis.

L. PLANTE, of Faribault, Minn., is remodeling his mill and putting in rolls, breaks and scalpels, manufactured by the Case Mfg. Co., Columbus, Ohio.

THREE double 9x18, and one double 9x24 Roller machines have been just ordered by J. Stoly & Co., Pekin, Ill., from E. P. Allis & Co., of Milwaukee, Wis.

ONE 9x18 Double Gray's Noiseless Belted roller mills, has been ordered from E. P. Allis & Co., of Milwaukee, Wis., by A. F. Ordway & Son, Columbus, Wis.

Two double 9x18, and one double 9x24 Roller machines have been ordered from E. P. Allis & Co., of Milwaukee, Wis., by A. F. Ordway & Son, Beaver Dam, Wis.

WILFORD & NORTHWAY, of Minneapolis, Minn., have ordered recently 19 of Gray's Double Noiseless Belted Roller Mills, from E. P. Allis & Co., of Milwaukee, Wis.

SCHRAEDER, MAURER & SMITH, of Enon, Ohio, have placed their order with the Case Mfg. Co., Columbus, O., for a full gradual reduction mill on the Case System.

THE Case Mfg. Co., Columbus, Ohio, have just taken the contract of Jordan, Shouty & McFarland, of East Brook, Pa., for a full gradual reduction mill on the Case System.

THE Michigan State Fair, at Jackson, has awarded the highest premium, with gold medal, to the Atlas engine works, of Indianapolis, for the best slide valve engine on exhibition.

Two pairs of 9 x 18 Allis' Rolls, Gray's Noiseless Belt movement and patent frame, have been ordered by R. Ruston, of Evansville, Ind., from E. P. Allis & Co., of Milwaukee, Wis.

A large invoice of roller mills was shipped to Australia via New York recently by Nurdyke & Marmon Co., of Indianapolis, Ind., for converting a 1,000-barrel mill to the roller system.

LATE deaths in the milling fraternity: Wm. Walker, Calumet Station, Prov. of Quebec, Canada; J. E. King, Bennington, N. H.; Samuel A. Smith, of Empire Mill Co., St. Louis, Mo.

MESSRS. H. RESENER & Co's mill at Cheshire O., which was rebuilt by C. B. Slater & Co., of Blanchester O., have added rolls for finishing up their offal, Slater & Co., doing the work.

E. P. ALLIS & Co., of Milwaukee, Wis., have recently made a large shipment of Rolls of all sizes to the Pacific Coast to meet the increasing demand for their machines in that region.

THE Stilwell & Bierce Mfg. Co., of Dayton, O., are having a large demand for the Odell Rolls, and are now making plans for a large number of mills in Ohio, Pennsylvania, Illinois and Michigan.

THE citizens of Henning, Minn., are very desirous of obtaining a good flouring mill, and are willing to give some inducements of a substantial nature to any one who will erect a suitable mill there.

A water mill has at last become an assured addition to the young city of Vaaler, Minn.. Mr. Tuff, of that place, having ordered a three-run outfit of Nurdyke & Marmon Co., of Indianapolis, Ind.

THE well known firm of Shepp & Co. Tamaqua, Pa., have decided upon remodeling their mill, and are having their roller mills and other machinery made by Nurdyke & Marmon Co., Indianapolis, Ind.

THE proprietors of the new mill at Grand Rapids, Mich., recently built by Nurdyke & Marmon Co., of Indianapolis, Ind., are jubilant over the results. The flour is highly spoken of all over the state.

C. B. SLATER & Co., of Blanchester O., are furnishing Mr. John Ribeyer at New Harmony, Ind., with two of their improved Bolting Chests, with Slater Reels, rolls for finishing up their offal, and other machinery.

THE EAGLE MILL Co., at Parkersburg, West Va., are about to give their mill a thorough overhauling, and have ordered their entire outfit, including the Slater Reels, from C. B. Slater & Co., of Blanchester, O.

MESSRS. D. W. BARRET & Son at Rainshoro, O., are enlarging their bolting capacity with Slater Reels, and are giving their mill a general overhauling. C. B. Slater & Co. of Blanchester O., furnishing the necessary machinery.

JUDGE RANDOLPH, of Princeton, Ky., has decided that a flouring mill would be a good investment, and with that end in view has purchased a two-run water mill outfit from Nurdyke & Marmon Co., of Indianapolis, Ind.

THE Minneapolis Millers held their second picnic at Lake Minnetonka, Saturday, Aug. 19. The affair passed off very pleasantly, and we regret that it was impossible for us to picnic with them, in response to their courteous invitation.

A new flouring mill is being built at Batesville, Mo., for W. H. Gaunt. The machinery consists of three run of stones and engine besides the usual parts, and all came from the Nurdyke & Marmon Mill Works, Indianapolis, Ind.

THE mill at Sweetwater, Tenn., which was about to be erected on the old millstone system, will contain nothing now but rollers, all of which together with the usual machinery will be made by Nurdyke & Marmon Co., Indianapolis, Ind.

THE water power at Columbus, Ga., is stated to be equal to 75,000 horse power, nine months in the year, and even at its lowest stage the water will give 37,500 horse power. Flouring, cotton, and other mills are there, but there is room for more.

THE mill of Saigers Bros., at Allentown, Pa., is to be remodeled to a roller mill by the Stilwell & Bierce Mfg. Co., of Dayton, Ohio. A complete line of the Odell Rolls are to be used. The millwright work is to be done by A. N. Wolf, of Allentown.

THE well known Winona Mill Co., of Winona, Minn., has ordered from the Case Mfg. Co., Columbus, O., a number of their 1st breaks and roller machines. They are now using 42 feed boxes in their mill, all furnished by the Case Mfg. Co., Columbus, Ohio.

A. H. JACKMAN & SON, Louisville, Neb., W. W. Davis, Monroe, N. C., E. L. Blackmore, Applington, Iowa, J. Burton & Co., Blanchester O., and John Dikes Monroe, N. C., have placed their orders with C. B. Slater & Co., of Blanchester O., for the celebrated Slater Reels.

MELLON & GAISER, New Brighton, Pa., have placed their order with the Case Mfg. Co., Columbus, O., for a full gradual reduction mill on the Case System. This will make 4 mills the Case Co. has in Beaver Co. on their system.

ODELL Roller Mills have lately been contracted for by Rictor & Co., Williamsburg, W. Va.; H. S. Snively, Junction Station, Pa.; B. S. Runburgh & Co., Sedalia, Mo.; Jas. L. Brownlee, Mondovi, Wis.; G. Frick, Chillicothe, O.; Stein & Trough, Pottsville, Pa.; Wm. Brenner, Atlanta, Ga.; W. G. Crabb, Clinton, Ind.; Jacob Snyder, Parksville, Ill.; W. D. Dorwin, Durant, Wis.; Crane & Hughes, Grand Ledge, Mich., and others.

At Winfield, Kan., Sept. 9, W. H. Colgate was arrested, charged with setting fire to Bliss & Wood's flouring-mill, which burned some weeks ago. Colgate was a book-keeper of the mill, and his books are said to be in a bad shape. Another man was put in his place. Colgate in a fit of rage and frenzy at being discharged, set fire to the mill and books. The prisoner is an only son of J. B. Colgate, a banker and millionaire of New York, and founder of Colgate Academy at Utica. Messrs. Bliss & Wood lost heavily by his operation.

An Immense Success!

READ IT!

READ IT!

OVER ONE YEAR IN OPERATION, GIVING SAME SATISFACTION AS WHEN FIRTS STARTED.

Fully Guaranteed.

No Filling up of the Cloth.

No Experiment any more.

Try it and Satisfy Yourself.

It is the only one which gives Satisfaction.

All the Leading Mills are adopting our Machines.

AN IMPORTANT PROBLEM SOLVED AT LAST.

Taking care of the dust laden air from Middlings Purifiers and other machines, using air to carry off the dust, has been thoroughly met and conquered in the highest degree by the

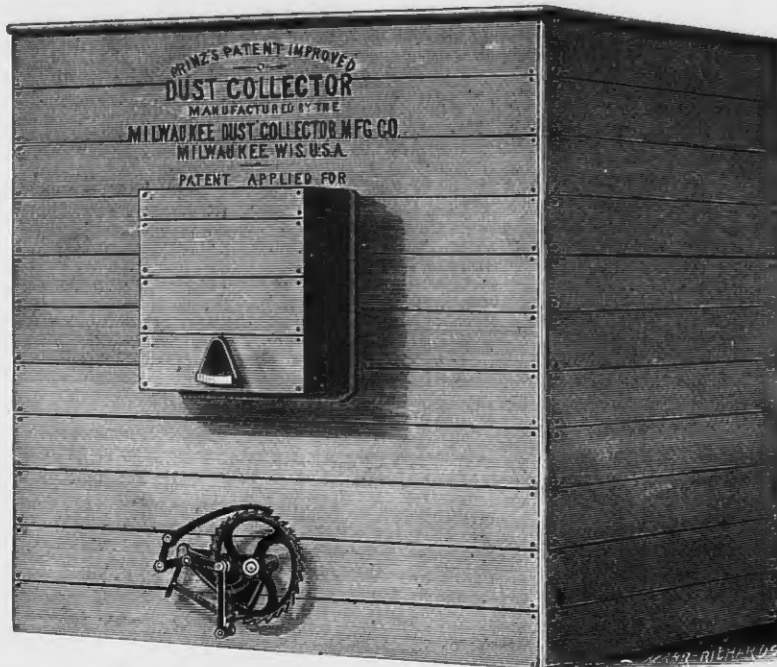
PRINZ DUST COLLECTOR.

After years of study and experiment success has crowned the labor of F. Prinz. He produced a machine, that will give satisfaction in such a manner that no miller would ask for anything better.

Simplicity is a Leading Feature in this Machine.

No Dead Air Chamber.—The dead air chamber, which has been a source of much trouble in other machines by wearing out and allowing the air to get in, thereby injuring the power of the cleaning mechanism on the cloth, which results in the cloth filling up, is entirely overcome in this machine, as it has NO DEAD AIR CHAMBERS.

Less Power is used with this machine than any other as there is no back press-



ure on the fan; the motion of the fan has to be reduced whenever this machine is applied.

It does away with the cumbersome dusty, dirty old-fashioned dust room, entirely, and the numerous spouts leading to them, which fill up the Mill, leaving no room to get around.

It Retains the Dust in the Mill, thus allowing no waste of stock by being blown out into the air as is the case with the old-fashioned dust room.

It does away with the liability of dust explosions, as the air coming from the machine is entirely free from dust, which is not the case with the air coming from any other Dust Collector offered to the milling public heretofore.

We the undersigned manufacturers **GUARANTEE ENTIRE SATISFACTION** in the use of this machine. Our machine does not infringe on any patent, which we fully guarantee; on the other hand we caution parties in purchasing infringing machines.

LOW PRICES FOR EXCELLENT MACHINES.

TESTIMONIALS.

MILWAUKEE DUST COLLECTOR MFG. CO.

Stillwater, Minn., July 24th, 1882.

Dear Sirs: Have made such inquiries as we are able, and upon such we increase our orders to four machines, adding three more for No. O Smith Purifiers.

Yours Respectfully,

J. H. TOWNSEND.

MILWAUKEE DUST COLLECTOR MFG. CO.

Dundas, Minn., Aug. 10th, 1882.

Gentlemen: We have been using the Prinz Dust Collector for the past year. We consider the machine a great success. It does its work well at all times.

Very truly,

E. T. ARCHIBALD & CO.

Milwaukee Dust Collector Mfg. Co.

MILWAUKEE, WIS.

[Please mention the United States Miller when you write to us.]

AN OPEN LETTER.

Office of J. B. Miller & Co., Ashley, O.

Ashley, O., Aug. 15, 1882.

Mr. C. F. Miller, Mansfield, O.

Dear Sir:—In reply to your favor of recent date, we have now been running about four months, and wish to say to you that your system of bolting, as adopted in our Roller Mill, has proved to be a great success, and your bolting cloth is certainly of very superior quality. We have not found it necessary to make any changes, since starting our mill, and we are very much pleased with results, both as to quality and yield of flour. In conclusion we wish to express our high appreciation of your ability in arranging mills, to operate on the gradual reduction system.

Very truly yours,

J. B. MILLER & CO.

Flour Wanted.

Millers wishing to sell their Flour direct in New England at a small commission by a salesman who can furnish first-class reference, please address

FLOUR SALESMAN,
Box 2679, Boston, Mass.

C. F. MILLER,

MANSFIELD, OHIO.

Materials and Plans for Stone or Roller Mills. Roller Mills furnished complete with all necessary appliances, and the most perfect system of bolting for Mills of any desired capacity. Genuine Zurich Silk Bolting Cloths by the piece, or made up with Webbing. Warranted best quality.

Mention the United States Miller when you write.]

DON'T BUILD A MILL until you write for Prices and Samples to the BODINE ROOFING COMPANY MANSFIELD, OHIO.

What Slater's Bolting Reels do.

The improvements in Alt & Co's Mill are complete and the Mill is again in full blast.

The Flour manufactured at this Mill is not surpassed by the finest brands made anywhere.—Eggingham Times.

We are increasing the capacity of the Mill we built at Barnesville, O., for Carter, Wiesner & Co. last spring. They say they are making the best Flour in the county. Respectfully yours,

C. B. SLATER & CO.

Blanchester, Ohio, U. S. A.

MESSRS. CARTER WEISNER & Co., at Barnesville, O., claim that their flour is far superior to any other manufactured in their county, and is getting a wide reputation. C. B. Slater & Co., of Blanchester O., who planned and built the mill, have been called upon to enlarge their capacity.

The Chicago, Milwaukee and St. Paul Railway Company is about to erect at Milwaukee a building 30 feet wide and 400 feet long, to be devoted to the manufacture of car wheels, and from it, when once in full operation, there will be turned out 150 wheels daily, or an annual product of 20,000,000 pounds of castings.

The Case Manufacturing Co. have just taken the contract to put their entire system in the "Canal mill" of Simon Gebhart, Dayton, O. Mr. Gebhart is one of the largest millers in Ohio, and is always on the lookout for the best in the way of machinery. He is one of the first in Ohio to adopt Gradual Reduction, which he did a year or two ago in his other Dayton mill. His brother, Joseph R. Gebhart, has just started up on the Case system.

The Case Mfg. Co., of Columbus, O., write us that they will have a display of their machinery at the coming Exposition at Chicago. Millers of the North and West attending will be interested in this as the line of machines made by this firm are at this time attracting no little attention. The company reports business brisk, and they are constantly adding to their force to enable them to get out the goods ordered. They have no traveling agents.

The Franklin Millwright and Machine Shops are putting in considerable new machinery and doing extensive repair work for the Union Steam Mills. Among the more important machinery being added are a ten-reel bolting chest, a two-reel bolting chest, one run of middlings stones and 300 feet of detachable link belting. The firm within the past year have more than doubled their working force, and this coming fall will still further increase it. Recently the firm put in a new boiler at their works, the old one being too small to run all their machinery.

MESSRS. Huntington & Koch, of Barton, Wis., have just started up their mill on the Case gradual reduction system, and from the tone of the local paper giving an account of it, we infer it has been a success from the start. The account says: "Their decision was made with great caution and deliberation, but their action then was quick and energetic. Only about two months ago they purchased at Columbus, Ohio, the 'Case roller system,' consisting of a series of seven sets of iron rollers for their Barton mills, and to-day they have them in full blast, manufacturing 100 barrels of flour per day and of a better quality than that of the world-renowned Minneapolis mills. We say that they make a better quality, because such is the fact. The Barton roller mills have all the very latest improvements, and are in this point fully ahead of the Minneapolis mills. We are assured also by these gentlemen that their rollers are to-day ahead of anything in the state, and they are so admitted to be by competent judges from all parts of the state who are daily visiting their mills to see this new system working, and who invariably return home convinced that the 'stone age' in milling is a thing of the past. Orders are coming in thick and fast from all quarters for their flour, and they can choose their customers and fix their price themselves. Indeed it may be said that they are without competition to-day, although it is not at all probable that they will remain so very long for other millers will be quick to profit by their experience, and the day is likely not far distant when the roller system will be as general in this country as the stone system now is."

of greater height, the old dam was submerged. A asserted the right to control the use of the water from the new dam, and B and C disputed his claim, and asked for an injunction against him. In this case, Adams vs. Manning, the Supreme Court of Connecticut, at the present term, decided that the injunction should be granted. Judge Parker, in the opinion said: The artificial use of the stream, by long-continued use, became its natural condition. The erection of the lower dam would not give to A any exclusive use of the water stored thereby, but by submerging the old dam A practically continued that in existence, and the rights of B and C in the old reservoir were continued in the new one. The judge added: When controversies arise between mill owners, each of whom has a separate right to the use of water to be drawn from a common reservoir for storage on irregularly recurring occasions of need, the time and manner depending upon the quantity in store the needs of others and established custom, it is the proper office of a court of equity to call them into its presence, and in one proceeding and by one decree determine their respective rights and obligations. A separate action at law to each for each wrongful detention or drawing will not furnish adequate relief practically no relief at all.

A Mill Dam Suit.

A raised a dam which set the water back on B's mill; C bought A's land, and B sued him for the damage he had suffered. In this case, Prentiss vs. Wood, the defense was made that, as the dam was raised in 1865, the right of B to sue was barred. The Supreme Judicial Court of Massachusetts, in April, in sustaining a verdict for the plaintiff, in the opinion, delivered by the Chief Justice (Morton), said: It is settled that a person who is injured by a continuing nuisance may maintain an action against the original wrong doer who creates it, or against any grantee who continues it after a request and refusal to abate it.

LEGAL.

A. B and C owned the mills on a certain stream, and they built a reservoir for their mutual benefit, above the mills, the water of which was used in common for over thirty years. Then A erected a new dam below, and, it being

The Little Giant Break Machines.



Single Break Machine, capacity 5 to 60 bushels per hour.

The rapid increase of our orders and wide inquiry for our Machines prove that the Case Reduction Machines are fast becoming the favorite system of Milling.

It is not an experiment.

THE CASE MANUFACTURING CO., COLUMBUS, OHIO:

GENTS:—We have been running your full system of Gradual Reduction for 90 days, and the result has been a fine one. It has been the cause of raising our flour \$1.00 per bbl., and increased our trade to such an extent that we are now way behind our orders. The Little Giant runs with little attention, and a better break can't be made from wheat. No fluff and but little break flour and a very even quality of middlings. We have made three tests on three different kinds of wheat. On Lancaster wheat we made a barrel of flour out of 4 21-60; on Fultz and White wheat we used 4 30-60. Were we to fit up another mill we would certainly buy the Little Giant.

Respectfully yours,

ASHLEY, OHIO, JULY 24TH, 1882.

J. B. MILLER & CO.



Double Break Machine, capacity 120 bushels per hour.

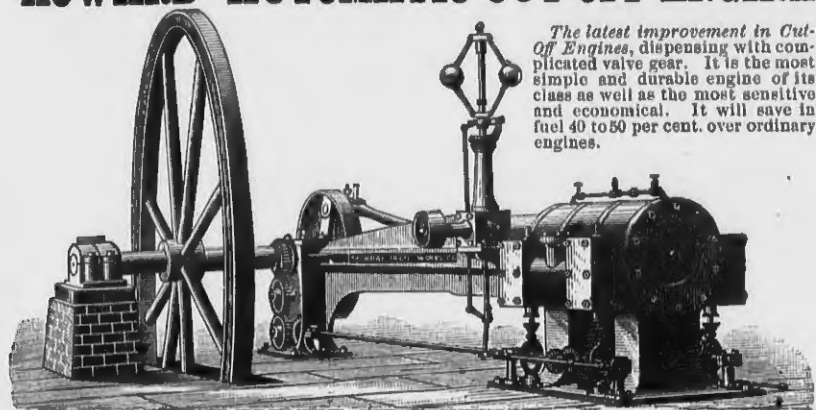
CASE MANUFACTURING CO.,

OFFICE AND FACTORY, 5th Street, North of Naughten.

[Please mention the United States Miller, when you write to us.]

COLUMBUS, OHIO.

"HOWARD" AUTOMATIC CUT-OFF ENGINE.



Built only by the MURRAY IRON WORKS CO., BURLINGTON, IOWA.
BUILDERS OF ALL KINDS OF ENGINES AND MACHINERY.

[Mention this Paper when you write to us.]

The latest improvement in Cut-Off Engines, dispensing with complicated valve gear. It is the most simple and durable engine of its class as well as the most sensitive and economical. It will save in fuel 40 to 50 per cent. over ordinary engines.

HARRIS-CORLISS ENGINE.

—BUILT BY—

WM. A. HARRIS, Providence, R. I.

Built under their original patents until their expiration. Improvements since added: "STOP MOTION ON REGULATOR," prevents engine from running away; "SELF-PACKING VALVE STEMS" (two patents), dispenses with four stuffing boxes; "RECESSED VALVE SEATS" prevent the wearing of shoulders on seats, and remedying a troublesome defect in other Corliss Engines, "BABBITT & HARRIS' PISTON PACKING" (two patents). "DRIP COLLECTING DEVICES" (one patent). Also in "General Construction" and "Superior Workmanship."

The BEST and MOST WORKMANLIKE form of the Corliss Engine now in the market, substantially built, of the best materials, and in both Condensing and Non-Condensing forms.

The Condensing Engine will save from 25 to 35 per cent. of fuel, or add a like amount to the power and consume no more fuel. Small parts are made in quantities and interchangeable, and kept in stock, for the convenience of repairs and to be placed on new work ordered at short notice.

NO OTHER engine builder has authority to state that he can furnish this engine. The ONLY WORKS where this engine can be obtained are at PROVIDENCE, R. I., no outside parties being licensed.

WM. A. HARRIS, Proprietor.

[Mention this paper when you write to us.]

BOLTING CLOTH



Let it not be forgotten that we keep a very large stock of the genuine Dufour Bolting Cloth always on hand, and those who order that brand from us will always be sure to get the genuine article. In addition to this we keep constantly on hand a large stock of Dutch Anchor Cloth, which we import direct from the manufacturers, in Switzerland, and is not sold by any other dealers in Bolting Cloths in this country. This we warrant to be equal to, and even superior, to any other brand in the market, except Dufour. We know what we say in this regard. Cloths made up ready for the reel in the best manner possible, by the use of our Patent Attachments, using the best of Ticking and Silk Twist. Please write us for prices, discounts, and samples of cloth and making, before purchasing elsewhere.

Address,

HOWES, BABCOCK & EWELL,

Silver Creek, N. Y.

[Please mention the United States Miller, when you write to us.]

A NEW DEPARTURE

We are the Sole and Exclusive Licensees for this Country under the

MORRITZ MARTIN PATENTS

— ON —

CENTRIFUGAL FLOUR DRESSING REELS

And we are now prepared to fill orders for machines with latest improvements, which include

**OUR NEW DOUBLE CONVEYORS,
NEW CLOTH FIXING AND STRETCHING DEVICE,
NEW AND SIMPLIFIED MANNER OF DRIVING.**

THE CENTRIFUGAL has more than FOUR TIMES the capacity of the ordinary reel, and will make clear flour and a clean finish on stock that cannot be treated in the common reel without loss, no matter how much silk it is passed over.

IT IS SPECIALLY ADAPTED to handling soft, reground material, full of light impurities, whether from rolls or stone. IT IS INDISPENSABLE to a CLOSE FINISH in any system of gradual reduction milling, and will improve the quality of the low grade flour at the same time it makes the offal cleaner.

IT MAKES A CLEAN SEPARATION on caked and flaky meal from smooth rolls, which no other style of reel can do. IT IS VASTLY SUPERIOR to the common reel for dusting middlings.

THEY CAN BE USED TO ADVANTAGE as a complete system of bolting, to the exclusion of the ordinary reel.

Over one Hundred sold in six weeks.

REFERENCE TO LEADING MILLERS IN THE UNITED STATES.

Write for descriptive circular and price list to

GEO. T. SMITH MIDDINGS PURIFIER CO., - Jackson, Michigan.

[Please mention the United States Miller when you write to us.]

THE MILLERS MUTUAL INSURANCE COMPANY OF WISCONSIN

is now issuing Policies of Insurance on all approved applications received so far. The Company has now sufficient members to allow it to increase the risks on any one Mill from \$1,000 to \$3,000.

All matters relating to Insurance should be addressed to

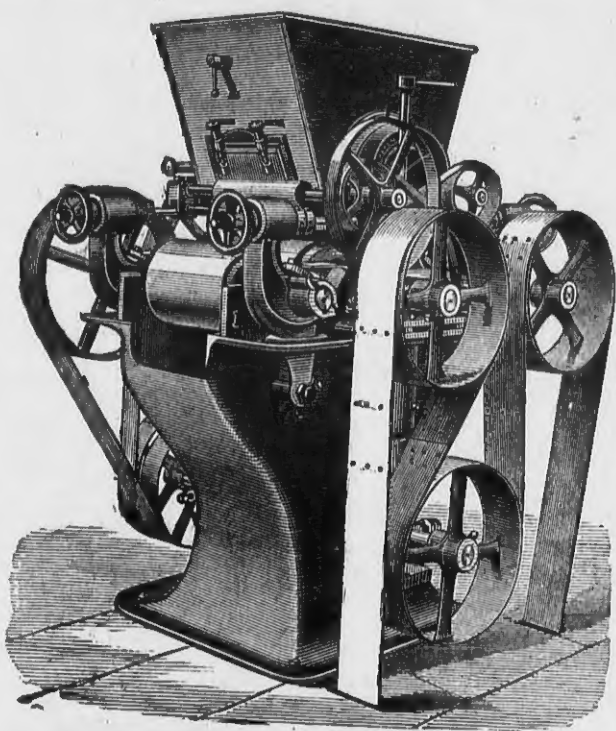
JOHN SCHUETTE, Sec., Manitowoc, Wis.

[Please mention the United States Miller when you write to us.]

EDW. P. ALLIS & CO.

MILWAUKEE, WISCONSIN.

MILL BUILDERS AND FURNISHERS,



AND SOLE MANUFACTURERS OF

GRAY'S PATENT NOISELESS ROLLER MILLS

CORRUGATED AND SMOOTH CHILLED IRON ROLLS,

WEGMANN'S PATENT PORCELAIN ROLLER.

We shall be Pleased to hear from Millers contemplating an improvement in their Mills, or Building new ones, and can furnish Estimates and Plans of our system of GRADUAL REDUCTION ROLLER MILLING. We have built and Changed over hundreds of Mills, in all parts of the Country, and using all classes of wheat, BOTH HARD AND SOFT, and can furnish references on application. The Largest and Best Mills of this Country are using our System and Roller Machines. Messrs. C. A. Pillsbury & Co., of Minneapolis, have over 400 PAIRS OF OUR ROLLS AND HAVE RECENTLY PLACED AN ORDER WITH US FOR ABOUT ONE HUNDRED AND TWENTY MORE. We have had a longer and larger experience in Roller Mill Building than any other manufacturers of this country. There is no EXPERIMENT ABOUT OUR SYSTEM and Rolls, so expensive to millers, and when the mills additions, stopping or expense. We manufactured and sold during the year 1881 over TWO THOUSAND FIVE HUNDRED pairs of rolls.

We can send competent men to consult with any millers who contemplate an improvement, and whom they can depend upon as being RELIABLE AND THOROUGHLY COMPETENT to advise them as to the number and kind of machines required, best method of placing them and the change required, if any, in the bolting and purifying system. WE DO NOT URGE A GENERAL CLEANING OUT OF ALL OLD MACHINERY unless we clearly see such would be the ONLY COURSE TO PURSUE to make a position, or with as slight a change as possible. We aim to make the Improvement so that it will be a Profitable one to the Miller, and at the least expense possible.

Our System is THOROUGH and RELIABLE, and our Roller Machine Perfected by Long Experience, and the Miller takes no chances in using them, as HE DOES with the New Fangled Notions of Drive and Adjustment on many other machines now TRYING TO FOLLOW OUR IMPROVEMENTS and still avoid our Patents, in BOTH of which THEY FAIL. We were the first to advocate the Entire Belt Drive, and were opposed by every other maker, who claimed it was not positive, etc., etc., and now that our Belt Drive is an ACKNOWLEDGED SUCCESS, and will SUPERSEDE EVERY OTHER STYLE, these advocates of Gear Drive have suddenly learned that Belts are the Thing. The same may be said of our Spreading Device, Feed Gates, and Adjustable Swing Boxes. Other Makers are now copying these. ALL these Features, including BELT DRIVE with ADJUSTABLE COUNTERSHAFT and TIGHTENER, the SPREADING DEVICE, FEED GATES, Adjustable Swing Boxes and Leveling Devices, Self-Oiling Boxes, etc., are secured to us by several Strong Patents, and we CAUTION MILLERS in regard to these Infringements of Our Patents and Rights, for we shall look to THEM for Redress. The matter is in the hands of our Attorneys, who will soon take VIGOROUS ACTION against the Makers and USERS OF MACHINES infringing Our Patents.

Several machines are already on the market which Broadly Infringe, and we are informed that other makers are now changing their Old Style Machines, and adopting in a large measure Our Improvements. BEWARE OF THEM.

Send for New Illustrated Catalogue, Giving full Information, to

EDW. P. ALLIS & CO.,

MILWAUKEE, WIS.

Branch Office 318 Pine Street, Benson Block, SAN FRANCISCO, CAL.

J. R. CROSS, Manager.

Frank Andree's Excelsior Centrifugal Flour Dressing Machine.

PATENT APPLIED FOR.

Economy is wealth, and this machine is economical in labor; economical in horse power; economical in repairs; economical in space; economical in price and rich in the yield, and thereby hangs EXCELSIORSHIP. The inventor, Mr. F. Andree has succeeded after many experimental efforts, in constructing a "Flour Sifting Machine" on the "Centrifugal Principle," which will prove in effect the above combination of merits. In Germany sifting machines have been universally adopted and scarcely will you find the common cylinder in use in any mills there, wind-mills not excepted. There are Centrifugal Machines in the market here, which however do not deserve recognition of great merit, they being of the German discarded pattern, and will do where there are none better, but time and study improves, and we offer a vastly superior one which we will try to bring under the notice of every miller, interested in the progress of milling machines, and we are confident of making it a "Miller's Pride" on account of its being a "dwarf in size and giant in effect."

Mr. Andree's invention consists of two cylinders, an upper or front, and the centrifugal; both of which are incased in frames or reels and constructed in such a manner that they act upon one another. The Centrifugal Machines in general use have no upper or front cylinder, in consequence of which the bolting cloth in the centrifugal cylinder is easily worn out and instantly destroyed if foreign matter works in. This evil is perfectly overcome by the upper or front cylinder. (See cut and description below.)

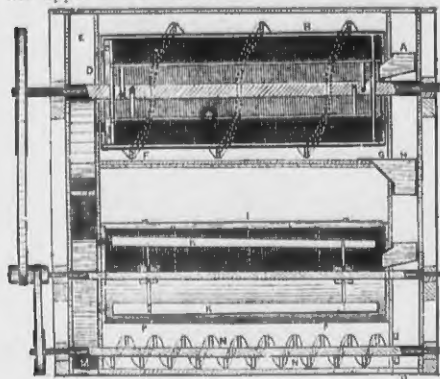


FIG. 1

DESCRIPTION.
Through spout A the chop enters Front Cylinder B. Grit or Middlings, and flour pass through and the bran is taken by the catchflap in the Front Cylinder, separated and carried through opening C and spout D. The grit and flour passing through Front Cylinder B are carried by conveyor E backward to opening F and spout G, and deposited into the Centrifugal Cylinder H, then received by the screw-shaped wings K and evenly thrown against gauze-reel I. The flour will pass through the gauze, while the middlings remain, and is taken by the wings K and carried to the front, passing outside through spout L. The flour drops in the hopper, having at its bottom a double conveyor, thence passes outside through spout M.

This machine is built in one size, and its ability surpasses all expectations. The power required is but trifling, as only one-half of one horse power will suffice to produce 150-180 revolutions per minute of the Centrifugal Cylinder; ten to twelve barrels can be sifted in an hour, and this work is performed infinitely better than it can be done with machines now in use, which require a good deal more power and accomplish but half the amount of work.

The bolting cloth in this machine will wear off but very little, if at all; the reel is constructed of three parts of frames, and is stationary. The bottom frame of the reel of the Centrifugal Cylinder is covered on the inside with zinc, and the other two frames with bolting cloth. As most of the action is below, all wear is avoided in this new construction. The frames are held together by means of screw-clamps, and can be changed within a short time, thus enabling the miller to have his bolting cloth fine or coarse.

The cheapness of the bolting covering is another item worthy of consideration, being only \$3.00 to \$4.00 for both frames. This ingeniously constructed machine will produce with three grades coarser bolting cloth a much better flour than the common cylinder, and occupies a considerably smaller space, being 6½ ft. long, 3½ ft. wide and 7 ft. high. The price, complete, delivered on board the cars at Chicago, uncovered, is \$350.00; for the cover \$9.00 will be charged if kept by the purchaser, if returned in good order, \$1.50 will be charged for the use of it only. We furnish on application an expert to put up the machine, who will receive, outside of board and free fare, \$4.00 per day.

THE MACHINE CAN BE SEEN IN OPERATION AT

INDUSTRIAL EXPOSITION..... Chicago, Ill.
ANDREE BROS., 376 & 378 N. Water Street..... Chicago, Ill.
NORTON MILLS, 3 West Madison Street..... Chicago, Ill.
PETER DAANE..... Oostburg, Wis.
EAGLE MILLING CO...... Quincy, Ill.
FRED VOLTZ, 676 Milwaukee Ave...... Chicago, Ill.
INDUSTRIAL EXPOSITION..... Milwaukee, Wis.

The above mentioned parties will at any time give desired information. All machines are built under the personal supervision of the inventor. Consignments made on ten days trial. Any further information will be cheerfully given at our office.

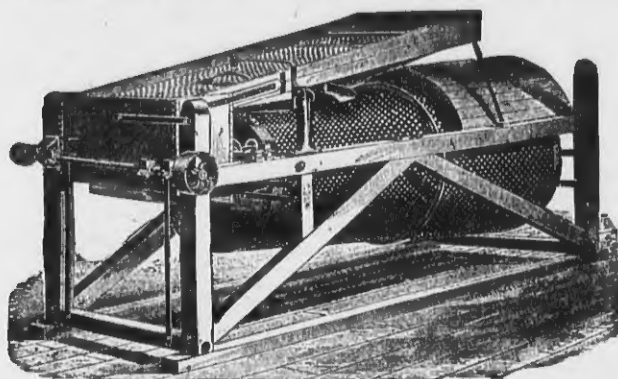
[Mention the United States Miller when you write to us.]

F. ANDREE & CO., Sole Manufacturers.

330 East Division Street, CHICAGO, ILL.

COCKLE SEPARATOR MANUFACTURING COMPANY, MILWAUKEE.

GENERAL MILL FURNISHERS



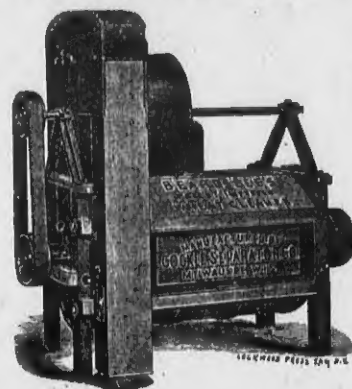
PLAIN COCKLE MACHINE.

IMPROVED COCKLE SEPARATORS

(Kurth's Patent.) Also built in combination with

Richardson's Dustless Wheat Separators!

Also Sole Manufacturer of BEARDSLEE'S PAT. GRAIN CLEANER.



BEARDSLEE'S WHEAT CLEANER.

Perforated Zinc at Bottom Figures.

Send for Illustrated Catalogue.

WE GUARANTEE GREAT CAPACITY combined with GOOD QUALITY OF WORK. Any common Sieve will separate the cockle from wheat, but to separate it WITHOUT WASTE is the GREATEST FEATURE of our Machine. A WASTEFUL machine is a DAILY LOSS OF MONEY in a mill. There is NO MACHINE IN THE MARKET which can stand comparison with ours.

Carbondale, Ill., Dec. 2, 1881.
Cockle Separator Mfg. Co., Milwaukee.
Gentlemen:—Replying to your late favor, would say that we can cheerfully recommend your Cockle Separator as doing all that you claim for it. We have tested ours thoroughly by this time and know whereof we speak. We would not think of doing without it, having tried it once, and can conscientiously vouch for its good work.
Yours respectfully,
BROWN & WINFREY.

Perrysville, Ind., Nov. 24, 1881.
Cockle Separator Mfg. Co., Milwaukee.
Sirs:—The combined machine I bought of you has been running about three weeks. It certainly does all you claim for it, and is the most perfect Separator that I have any knowledge of.
Yours respectfully,
B. O. CARPENTER.

Hixton, Jackson Co., Wis., Dec. 30, '81
Cockle Separator Mfg. Co., Milwaukee.
Gents:—In answer to your inquiry of the 28th inst., I would say that the combined machine I bought of you last summer, works to my entire satisfaction. Respectfully yours,
W. T. PRICE,
per **D. G. THOMAS.**

P. S.—I have been milling now for twenty-seven years, but never have I seen anything that will equal yours in cleaning wheat.
As an Oat Separator it is No. 1, and for Cockle it cannot be beat. I can take screenings and separate the cockle from it without wasting any of the small wheat. In my opinion every mill in the United States ought to have one, and if I were to build a mill I would have no other. I remain
Yours, etc. **D. G. THOMAS.**

Minneapolis, Minn. Aug. 22, 1881.
Cockle Separator Mfg. Co.

We have been using two of Beardslee's wheat cleaners, a scourer and finisher, for nearly two years, and are passing one hundred and fifty bushels per hour through them, one third more than rated capacity, and are not using any other cleaners, and consider our wheat as well cleaned as any in Minneapolis.
Yours truly,
CAHILL, FLETCHER & CO.

La Crosse, Wis., July 30, 1881.
Cockle Separator Mfg. Co., Milwaukee.

Gentlemen:—The Beardslee Grain Cleaner sent me about the middle of June has been in operation since that

time with very satisfactory results. We cannot see that it breaks the wheat or requires an unusual amount of power to run it.
Yours truly,
WILLIAM LISTMAN.

Milwaukee, Wis., Aug. 23, 1881.
Cockle Separator Mfg. Co.

Gentlemen:—The Beardslee's Grain Cleaners which we have purchased from you for our New Era and Milwaukee Mills give us the best of satisfaction. Experienced millers having seen the work done by the machine agree with us, that it cannot be beat. You are at liberty to use our names as a reference, and to any party calling on us we will be pleased to show the machine in operation.
Yours truly,
NEW ERA MILLING CO.

Pott's Patent Automatic Feeder! The best device for regulating the FEED ON ROLLER MILLS, PURIFIERS, and other machines requiring a regular feed, spread out the full width. Very cheap and simple. Sent on trial upon application. Write for circulars with illustrations. Perforated Zinc of all sizes at low rates. Send for Illustrated Catalogue.

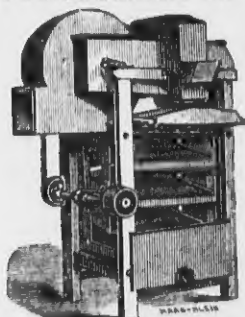
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Established 1856.

Silver Creek, Chautauqua County, New York, U. S. A.

Established 1856.

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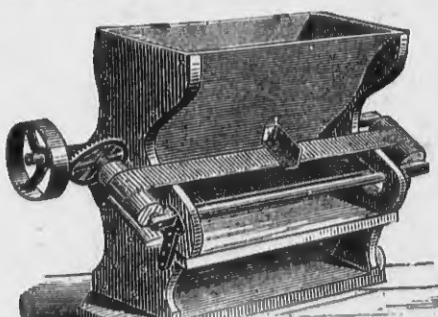
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occupies but little space, does its work in an effectual manner. Is also built for use in Elevators and Warehouses, with a capacity of from 100 to 1,000 bushels per hour.



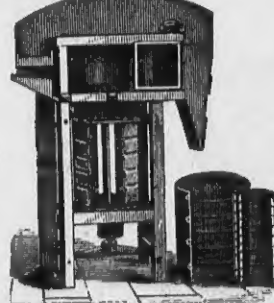
The Eureka Smut and Separating Machine.

A combined Smut and Separating Machine, having thorough ventilation. Over 14,000 of these Machines are now in use.



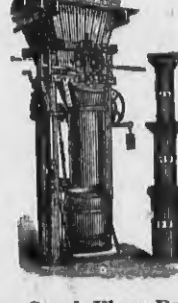
Eureka Magnetic Automatic Separator.

Removes all metallic particles from a flowing stream of grain, requiring no attention from the miller. 5 sizes.



Eureka Brush Finishing Machine

Recognized as the leading one of this class of machines. Universally recommended for finishing the process of cleaning.



Silver Creek Flour Packer.

Will pack whole and half barrels, and half, quarter, eighth and sixteenth barrel sacks. Provided with labor-saving patent creveling steel coil spring regulating the packing to perfection.

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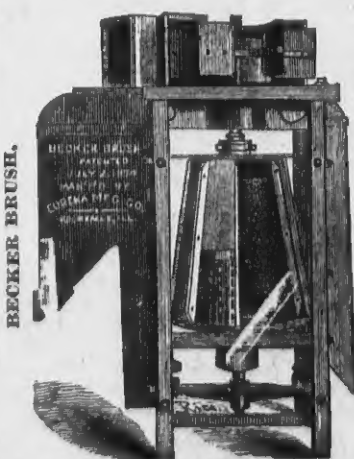
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The Only Practical Cone-Shaped Machines in the Market, and for that Reason the Best.

ADJUSTABLE WHILE IN MOTION.

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